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THE IRON AGE

THE NATIONAL METALWORKING WEEKLY December 22, 1949

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DEC 22 1949

Prevailing labor rates make this high speed precision lathe a definite essential for lower costs of production.

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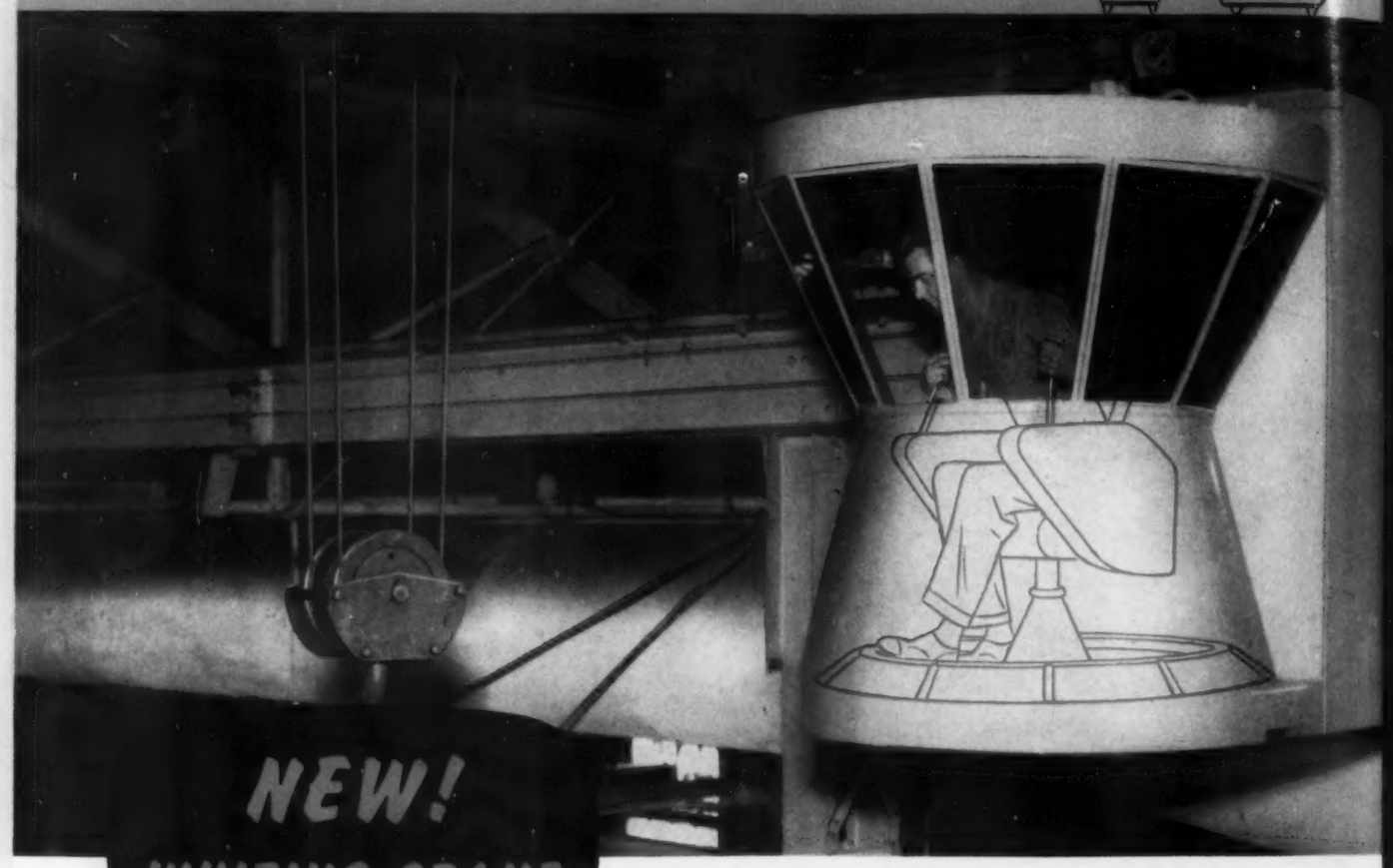

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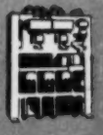

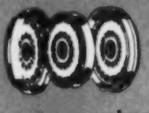

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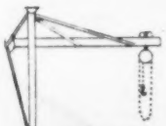
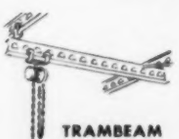
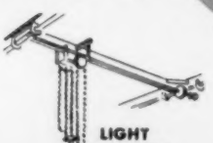


JIB CRANES



TRAMBEAM SYSTEMS



LIGHT CRANES

Also: Foundry Equipment • Railroad Equipment • Metal-Working Machinery • Swenson Evaporators and Spray Dryers Food Freezers

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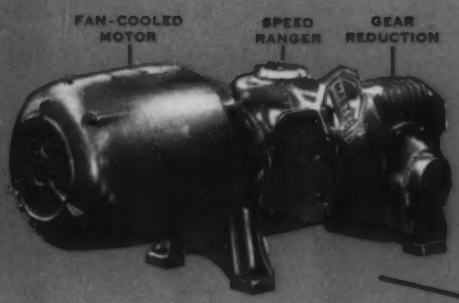

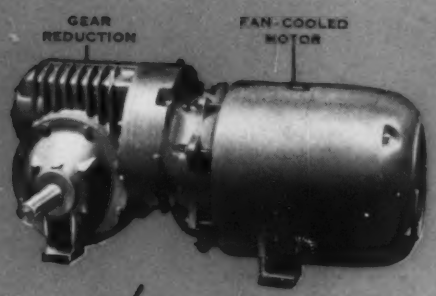

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THE IRON AGE

Special Articles

A description of what is probably the world's most modern continuous strip brass mill, highlighted by a color insert covering the processing sequence, is described in the article "Scovill's New Continuous Brass Mill," p. 59. Operating data and illustrations are given of the processing equipment, such as the flat bar continuous casting machine, 5-ton electric melting furnaces, and the largest break down mill and annealing furnaces used in the nonferrous industry.

Issue Highlights

In advancing base prices by an average of $2.00 a ton and extra charges by the same amount, U. S. Steel Corp. has done far more than make a moderate price increase. It has drastically changed its method of arriving at extra charges, particularly on sheets basing them on manufacturing costs with modern mills instead of former costs on outmoded hand sheet mills.—p. 87.

Tinplate prices were cut by an average of $3.30 a ton; the pipe skelp base price was reduced $2 a ton but extras were advanced by $5; wire rods were advanced $9 a ton but extra changes were negligible; electrical sheets took the biggest boost — an average of $25.00 a ton on base price and $4.50 a ton on extras.—p. 87.

Subsidiary companies of U. S. Steel generally followed the Carnegie-Illinois price pattern. Alloy steel bars were moved up by $4 a ton though extra increases were negligible. No changes were made in stainless steel base prices or extras.—p. 89.

Coming Next Week

How Dresser threadless pipe fittings make possible a 35 to 40 pct time reduction in the installation of piping on a Newport Steel blast furnace during repairs after a break-out is described in an article appearing next week. Also featured is a presentation of the installation of semi-automatic machinery lines at Easy Washing Machine Corp., Syracuse, N. Y., that shows how this plant achieved high production rates, and close tolerance limits economically and with a minimum of labor.

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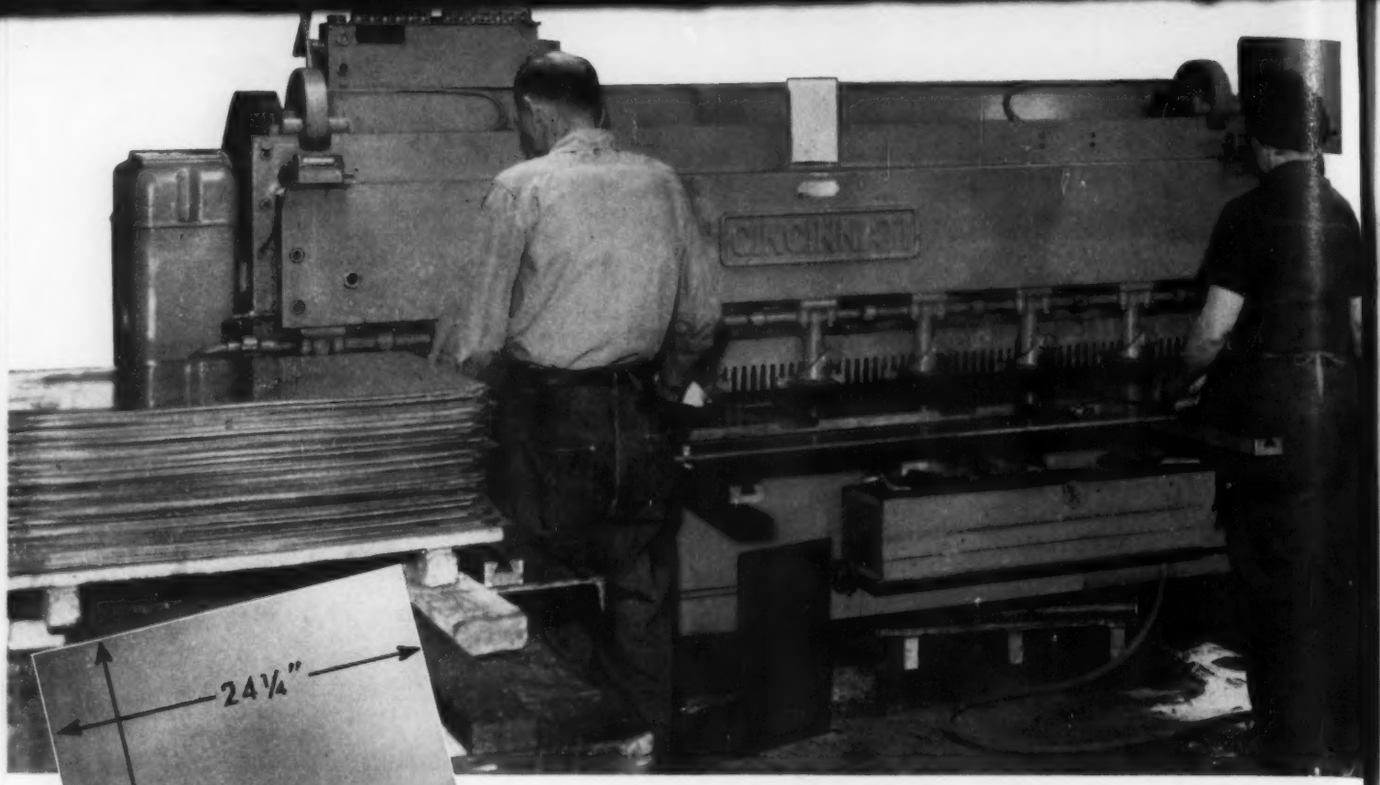

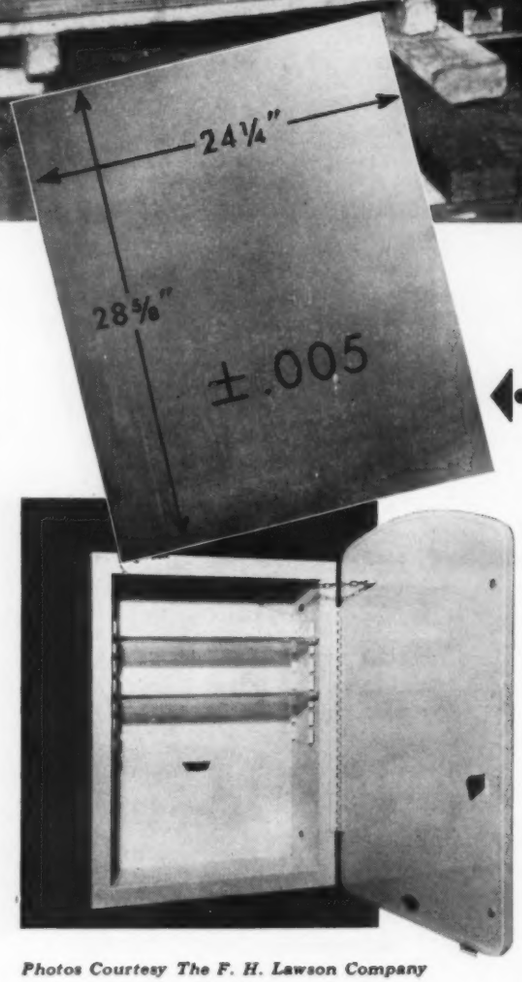

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These accurate blanks are held to tolerances of ± .005' on Cincinnati Shears in the shops of The F. H. Lawson Company, manufacturers of medicine cabinets, pails and all sorts of containers.

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SHAPERS SHEARS BRAKES

Editorial

INDUSTRY VIEWPOINTS

Why Steel Price Increases?

ONLY government people and those not associated with the metalworking industry are surprised that steel prices are going up. To think that an adjustment was not due borders on the ridiculous.

Statements came out of Washington as soon as the news was in the daily newspapers. Most of them showed no recognition of the plight in which industry finds itself. The money to pay for social insurance and pension plans had to come from some place.

There is only one logical place to get money to pay for things: From selling prices and from the gain in production per employee. This last comes from either more work per employee or from better machines and equipment.

The steel price increase is part of the programs which firms are being forced to adopt to keep strong and able to make steel at a profit—let alone make enough to pay social security commitments.

But there was more to it than that in steel. For years the industry has been faced with new factors that have antiquated its extra charges. Customers have squawked long and loudly over some extra charges and have been as meek as Moses about others.

There was a reason for this. Some of the charges were not figured in the light of today's costs of supplying the proper chemical or physical characteristics, which are paid for with extras. Some were too high and some were too low. The customer always knows when the price is fair and right. It has taken some steel companies a long time to get their extra charges on a good sound business basis—in the light of what costs they face now and later. This was the time to do it.

So this week we have a lot of sputtering in government circles because steel companies want to charge enough for their products to: Make a profit; get better machinery so they can stay in business; pay for welfare programs; and to realistically face the fact that 90 pct operations in steel is not an everlasting thing.

Steel firms tried to reduce prices last year. Higher labor demands squashed that. The pension victory this year was nothing more than a fourth wage round—and a permanent one at that. Freight rates are up and raw material costs have advanced a lot since the last major steel price increases.

Tom C. Campbell

Editor

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Westinghouse

in porcelain enameling

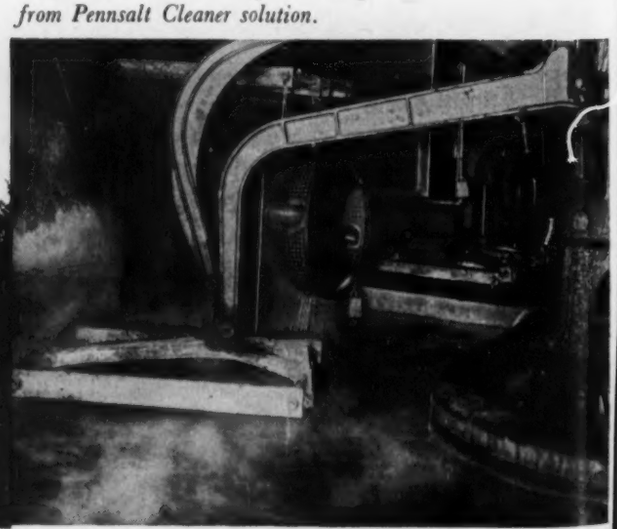
gets fewer rejects

higher uninterrupted production

lower cleaning costs

Pennsalt Metal Cleaners

Liners and Laundromat parts emerge from Pennsalt Cleaner solution.



Some Extras Drastically Revised

Wide Sheets Cut by $10 per Ton

Finished Steel Composite Up 3.5 Pct

The Iron Age SUMMARY

IRON AND STEEL INDUSTRY TRENDS

THE changes in extra charges announced last week by U. S. Steel Corp. and the revision in base prices mean much more than just a moderate and not unexpected boost in average steel prices. They reveal a revolutionary method of arriving at extra charges and apparently show a new kind of thinking on steel pricing: Make each product stand on its own from a profit standpoint.

The revolution in "extra" pricing is most apparent to sheet users. Actually it is only a delayed recognition of the technological revolution that had completely swept the steel industry long before the war—the changeover to wide high speed continuous mills which roll out tremendous tonnages of flat-rolled steel at high speeds. Before this happened it was more difficult and costly to make the wider sheets: The old hand mills were better suited to narrow short sheets. So the steel companies charged more for the wider sheets, less for the narrower ones.

New Mills Revised Costs

Today the production and cost picture is practically reversed. The modern steel mill makes twice as much 40-in. wide strip in an hour as it does 20-in. wide strip. Labor and overhead costs per ton are therefore lower on the wider sheets.

The refrigerator manufacturer who is now using a 20-gage 22-in. wide cold-rolled sheet 120 in. long got a $2.00 a ton base price increase and a $7.00 a ton increase in extras in the U. S. Steel changes. The automobile manufacturer who uses a 22-gage 60-in. wide sheet 120 in. long got the same $2 a ton boost in base price but extras on this size were slashed so that its cost per ton has been reduced from $104.00 to $94.00, a price reduction of $10 a ton. A 22-gage cold-rolled sheet 44x144 in. now sells for $5 a ton less under the new U. S. Steel schedules.

Smart steel buyers are therefore going over the new extra lists very carefully. Next the designers and production engineers will be called in. Buying practice of many firms will be changed, and perhaps in time so will design. If it is possible to redesign for wider sheets without much increase in manufacturing and assembly costs it will be done, with the net effect being a saving in steel cost to some fabricators despite the base price increase.

Products Balanced Profitwise

The second factor disclosed in the price increases is this: U. S. Steel has apparently decided to price its products in such a way that there will be an equal percentage of profit on almost all of them. (Semifinished products may still carry a somewhat lower profit margin.) This explains why there was not a flat across-the-board boost in base prices. Tinplate and pipe skelp base prices were cut; a number of base prices were unchanged; advances averaging $2.00 a ton on a weighted basis ranged all the way from $1.00 to $29.50 a ton, the latter on electrical sheets.

Electrical sheets are typical of the products that were not pulling their weight. In apparently bringing these sheets into line profitwise, U. S. Steel inadvertently did a favor for its competitors, all of whom were presumably losing money at the former price since several of them publicly said so. To the buyer of these and other products that were sharply increased this may be little solace. But this should be the end of a not uncommon tendency to push the steel products that earned the biggest profit.

Scrap Prices Drift Down Again

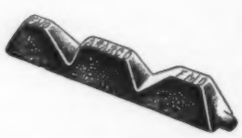
If, as expected, other steel companies meet U. S. Steel's prices, THE IRON AGE finished steel composite price will advance 3.5 pct to 3.835¢ per lb. This increase is higher than the weighted average 2 pct base price increase because THE IRON AGE composite does not include certain items (notably tinplate) which were either reduced, or not advanced.

Steel ingot operations for the week are up half a point to 94.5 pct of rated capacity. Steel scrap prices declined again at several points. A $1.00 a ton drop at Pittsburgh sent THE IRON AGE scrap composite off by 33¢ a ton to $26.92 a gross ton. Other weak spots included Cleveland, Youngstown, Birmingham, Buffalo and Boston.

Photo by Toby Chadwick

JMLee F151

Profitable New Product Invented by Foundry...



A sound idea, engineering skill, and the *right* Federated metals for its cast components are combined in the LITTCO ELECTRIC MOWER, manufactured by the Littlestown Hardware and Foundry Company, Inc., Littlestown, Pa.

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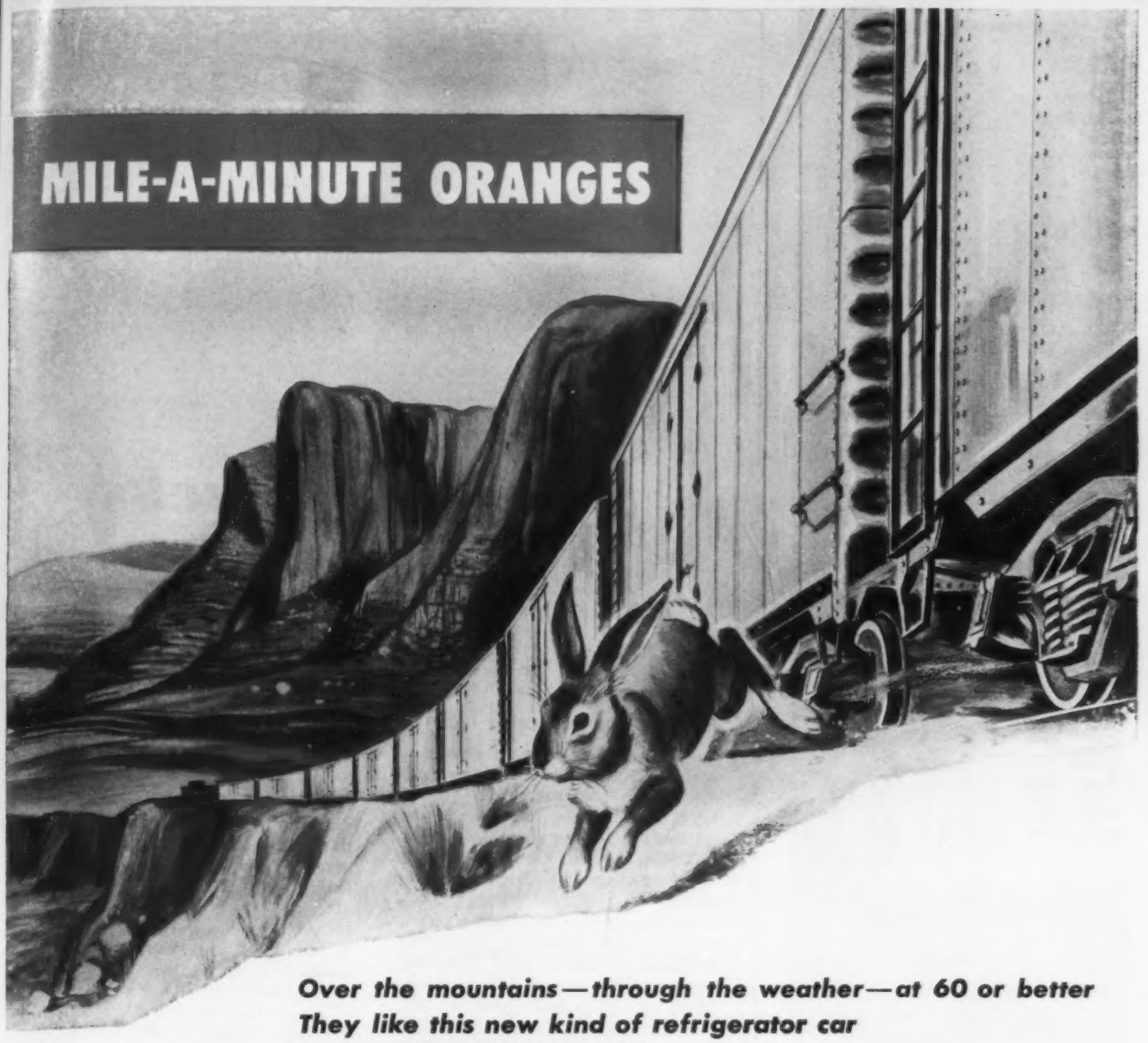

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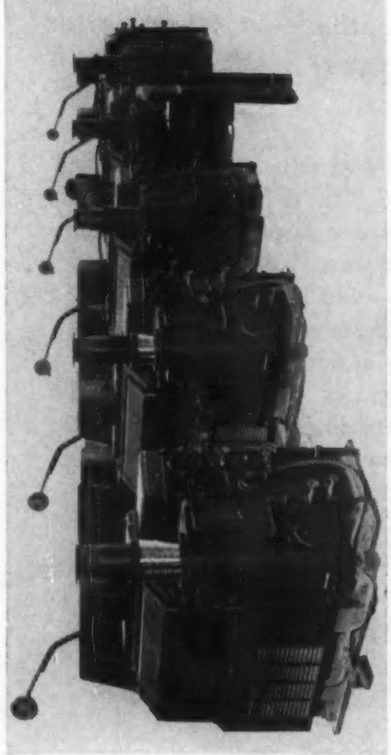

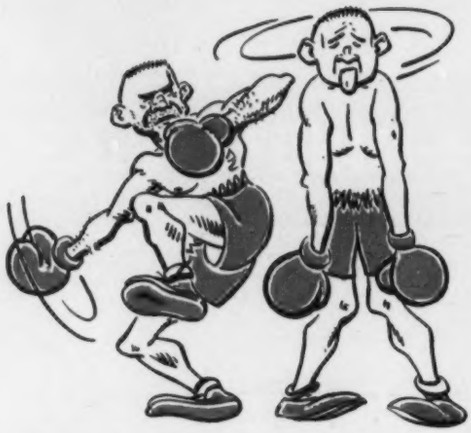

Fatigue Cracks

By Charles T. Post

Merry Christmas

About the time this week's issue bounces out of the mail room into the eager hands of your f.f.j.'s loyal readers, the office Christmas parties should be rolling full swing.

The strains of Christmas carols will be rolling full volume from the church choir veterans whose voices have been muted all year, bringing fruit to the prophecy that "the meeks shall inherit, etc." The gruff, authoritative leaders of men, whose booming orders have sounded over the shop in other seasons, will be doing their best to at least hum the tune. This is all well and good, in keeping with the spirit of the season.

If you can remember back that far, Christmas, 1948, brought forth a catchy tune "All I Want for Christmas Is My Two Front Teeth." This struck a particularly sympathetic note with the 7-year olds. For our part, the most wonderful thing in the world would be to be able to play Sant a Claus without hooking a false beard around our ears and attaching hirsute adornment to our upper lip with adhesive tape.

The closest we ever came to it was one summer vacation when we simply neglected to shave above the lip-line. As we look back on it, our mustache was a thing of wonderment—fertile, full-blown and distinguished, although slightly reddish compared to the dark bush on top of the head, With a little imagination we could look in the mirror and picture new rivalry for Errol Flynn by October and an eventual leg on seasonal Santa Claus employment to bolster our declining years.

The general manager at home, we are sorry to say, took a very dim view of this whole exciting prospect. Her disparaging remarks discouraged us not in the least. But the end came one night after we had crawled into bed and leaned over to kiss her good night in the best Flynn tradition. As we closed her tender lips to our own we collided with the sharp bristles of one of Dr. West's stiffest tooth brushes. The razor did a full job the next morning and we haven't mentioned the subject from that day to this.

Strapped

When we dropped into this space last month a picture of a big commercial laundry machine which had dropped off a truck in front of the Signode Steel Strapping plant in Chicago, we airily assumed that the Signode sales staff would have hell to pay because it wasn't on hand to make a sale to the trucking company. Steel strapping, we were sure, would have been just the thing to have prevented such a mishap.

This was just another case in which the experts which read your f.f.j. bobbed up to argue the matter further. Henry A. Segal of Segal's Motor Express, who describes himself as "a steady reader of our favorite family journal," lost no time in advising tnat "the proper and commonly used fasten-

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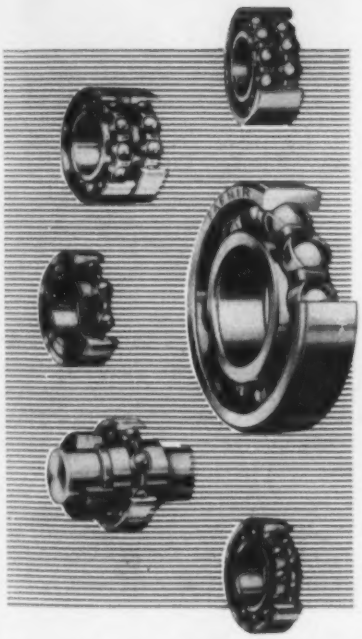
HERE'S HOW...



FAFNIR USES 20 LINDBERG CYCLONES

... to draw thousands of types of bearings!

The Fafnir Bearing Company, New Britain, Conn., uses Lindberg Cyclone Furnaces to draw thousands of types and sizes of its line of ball bearings. They say:

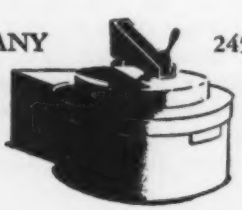
"The metallurgical department of our company entrusts the major part of its drawing operations to Lindberg Cyclone Furnaces because it has found them to be dependable work horses. At the present time there are 20 in use in the Company's three ball bearing plants in New Britain, Conn.

"They have given excellent continuous service for more than 8 years. For long periods they were operated 24 hours a day, seven days a week, (at temperatures ranging from 275 to 1200°F.) without downtime due to furnace failure.

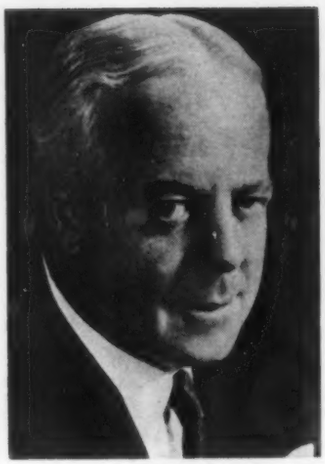
"Because the Fafnir line of ball bearings,comprising thousands of types and sizes, is considered the most complete manufactured in this country, the Lindberg Cyclones draw a considerable variety of parts. The work varies from small to large dense loads (up to 1600 lbs.) of bearing rings, balls and rolls, yet the uniform results demanded for the manufacture of precision products is constantly being achieved—and in an atmosphere of cleanliness and satisfactory working conditions."

Local Offices in every industrial center.

LINDBERG ENGINEERING COMPANY 2452 W. Hubbard Street, Chicago 12, Illinois.

LINDBERG  **FURNACES**

Iron Age Introduces



HILAND G. BATCHELLER, chairman of the board, Allegheny Ludlum Steel Corp.

E. B. CLEBORNE, president, Allegheny Ludlum Steel Corp.

E. J. HANLEY, executive vice-president, Allegheny Ludlum Steel Corp.

Hiland G. Batcheller has been elected chairman of the board of ALLEGHENY LUDLUM STEEL CORP., Pittsburgh. **E. B. Cleborne,** formerly executive vice-president, will succeed Mr. Batcheller as president. Mr. Cleborne is succeeded in his position by **E. J. Hanley** who was previously vice-president in charge of finance and treasurer. **Clark W. King,** who is a vice-president, has also been named treasurer and elected a director. **T. Ames Wheeler** was elected controller. **R. M. Allen** and **William J. Kyle** have also been elected to the board of directors.

Morton Downey was elected a director of GENERAL ANILINE & FILM CORP., New York. Mr. Downey is the executive vice-president of Carbagell, Inc.

George F. Noltein has been appointed director of research of the Superior Engine Div., NATIONAL SUPPLY CO., Pittsburgh. **Harvey W. Hanners** will succeed Mr. Noltein as chief engineer. Mr. Noltein joined National Supply's Superior Engine Div. in 1927. He has been chief engineer there since 1937. Mr. Hanners joined the division in 1941, and has been assistant to the chief engineer for the past two years.

John E. Payne has been named manager of the Central Dist. of WESTINGHOUSE ELECTRIC CORP., Pittsburgh. Mr. Payne joined Westinghouse in 1925 and has held various positions with the company since that time. He is a member of the American Society of Mechanical Engineers.

Frank A. Schotters has been made operations manager, Parts Div., REYNOLDS METALS CO., Louisville, Ky. Mr. Schotters has been vice-president in charge of operations at the Trailmobile Co., Cincinnati, prior to joining Reynolds Metals Co. **Jonas H. Ingram,** Admiral U. S. Navy, retired, has become executive representative for the company.

William O. Walk has been appointed division superintendent, heat treating and forge division at Homestead Works of CARNEGIE-ILLINOIS STEEL CORP., Pittsburgh, succeeding **Albert B. Steigerwalt,** deceased. Mr. Walk began with U. S. Steel Corp. as a metallurgist at Clairton in 1930, and has been assistant to the general superintendent at Homestead since 1946.

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LEYSHON W. TOWNSEND, vice-president, American Cladmetals Co.

CHARLES E. RICE, general manager of sales, Jessop Steel Co.

CLARK W. KING, vice-president, treasurer and director, Allegheny Ludlum Steel Corp.

Neele E. Stearns has been elected executive vice-president of the INLAND STEEL PRODUCTS CO. a subsidiary of Inland Steel Co., Chicago. Prior to his new appointment Mr. Stearns has been assistant general sales manager of the parent organization. He was formerly a junior partner of the A. T. Kearney Co., Chicago, management consultants.

Harry K. Hamilton, founder of the HAMILTON STEEL CO. a subsidiary of Fort Duquesne Steel Co., Pittsburgh, will retire Dec. 31 as president and as a director of the company. Before founding Hamilton Steel in 1931, Mr. Hamilton was connected with Edgar T. Ward's Sons Co., Cleveland. He will be succeeded as president by **E. W. Harwell.** Mr. Harwell came to Hamilton Steel a year ago as vice-president and general manager.

Leyshon W. Townsend has been appointed vice-president of the AMERICAN CLADMETALS CO., Carnegie, Pa. Mr. Townsend has formerly been associated with Lukens Steel and Jessop Steel. With American Cladmetals since last year, he has been assistant to the president.

Robert Fulton has been named superintendent of the Plastic Metals Div., NATIONAL RADIATOR CO., Johnstown, Pa. Mr. Fulton had been affiliated for the past four years with the Indiana Steel Products Co. as production manager of the Eastern Div. **John E. Harris** has been appointed technical adviser to B. T. Hain, vice-president for manufacturing. Mr. Harris joined National Radiator in 1943 as plant superintendent of the Plastic Metals Div. **Roger D. Anderson** has been appointed sales representative in Nebraska and Western Iowa for the company.

Craig R. Sheaffer has been elected to the board of directors of KEOKUK ELECTRO-METALS CO., Keokuk, Iowa. Mr. Sheaffer is president and director of the W. A. Sheaffer Pen Co. and a director of Northwestern Bell Telephone Co.

Joseph D. Flynn has been named manager of purchases and stores of the MIDVALE CO., Philadelphia. Mr. Flynn will be responsible for the operation of the purchasing department and the receiving and stores department.

Charles E. Rice has been appointed general manager of sales of JESSOP STEEL CO., Washington, Pa. Mr. Rice was previously manager of sales for the Pittsburgh territory. He has been associated with Jessop Steel in a sales capacity for seven years. Previously he had been with Crucible Steel Co. of America, New York, for 22 years.

Robert C. Hood has been named president of ANSUL CHEMICAL CO., Marinette, Wis., succeeding his brother **F. James Hood** who died. Sales director **Leonard C. McKesson** was named vice-president in charge of sales and **Arthur C. Pope** was elevated to vice-president in charge of manufacturing. Mr. Hood has been associated with Ansul for 10 years serving in various capacities.

Alton J. Hole has been appointed plant manager of the Buffalo pressed steel unit of FORD MOTOR CO., Dearborn, Mich. Mr. Hole has been serving as general manager of Highland Park Operations. **Edgar F. Wait,** who has been serving as assistant plant manager at Highland Park, has been named acting plant manager. **W. E. Kimbrough** has been named manager of the Ford Div. distribution department. Mr. Kimbrough joined the company in 1928 and held various positions in the management of both car and truck sales in Omaha and Denver.

Turn to Page 112

BUILT TO DELIVER THE

DEMPSTER BALESTER
TRADE MARK REG.

"128"

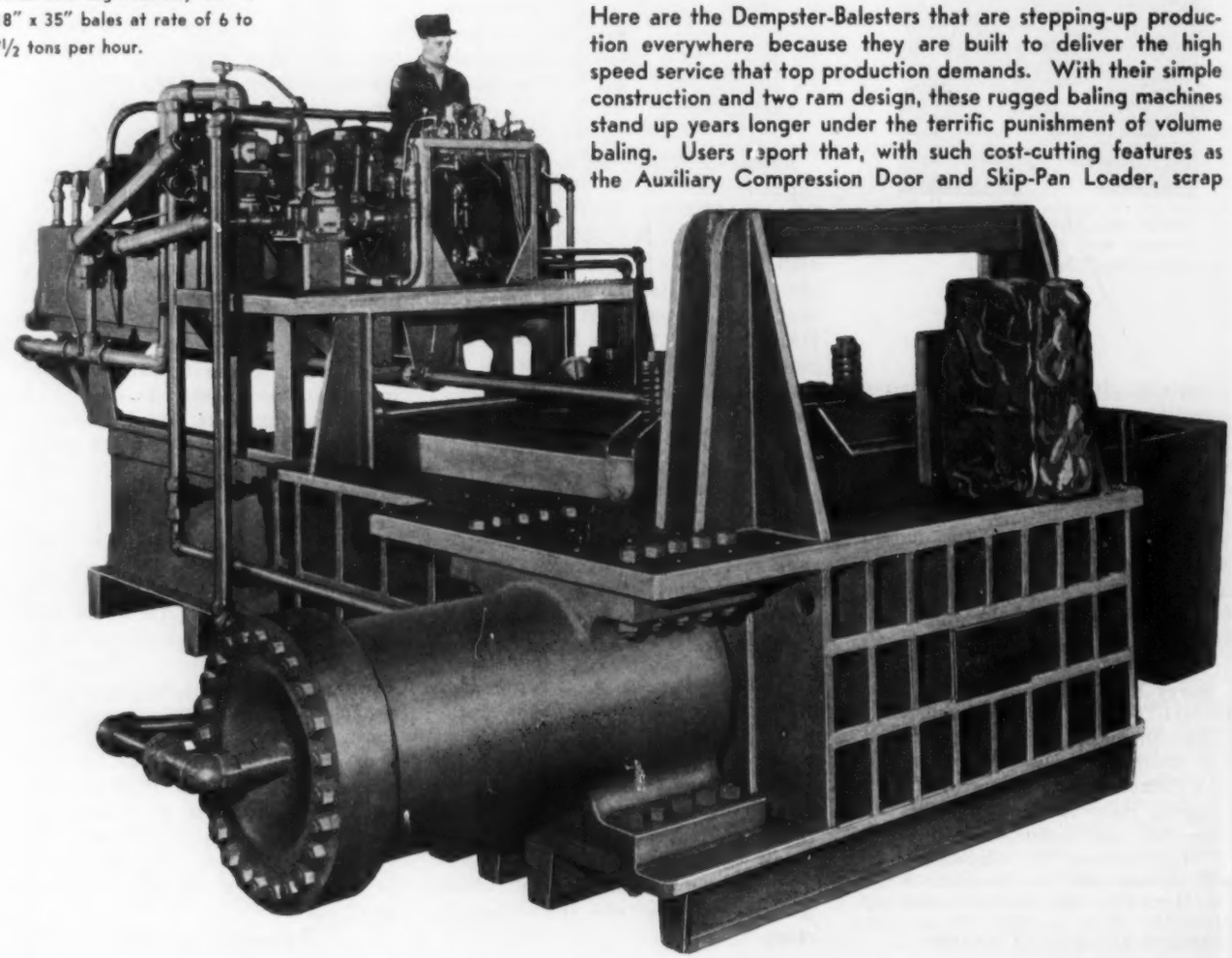
Portable press that produces compact bales measuring 10" x 12" x 16" at rate of 1½ to 2 tons per hour.

"600"

Turns out high density 16" x 18" x 35" bales at rate of 6 to 7½ tons per hour.

OWNERS REPORT...25% Production Increase With Auxiliary Compression Door!

Here are the Dempster-Balesters that are stepping-up production everywhere because they are built to deliver the high speed service that top production demands. With their simple construction and two ram design, these rugged baling machines stand up years longer under the terrific punishment of volume baling. Users report that, with such cost-cutting features as the Auxiliary Compression Door and Skip-Pan Loader, scrap



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STANDARDS and SPECIALS by the Millions

THE FERRY CAP & SET SCREW CO.

2157 SCRANTON ROAD • • • CLEVELAND 13, OHIO

"SHINYHEADS"

America's Best Looking Cap Screw

Made of high carbon steel — AISI C-1038 — to standards for Full Finished hexagon head cap screws — bright finish. Heads machined top and bottom. Hexagon faces clean cut, smooth and true, mirror finish. Tensile strength 95,000-110,000 p.s.i. Carried in stock.

"HI-CARBS"

Heat Treated Black Satin Finish

Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made, not machined. Points machine turned; flat and chamfered. Tensile strength 130,000-160,000 p.s.i. Carried in stock.

"LO-CARBS"

Made of AISI C-1018 steel — bright finish. For use where heat treatment is not required and where ordinary hexagon heads are satisfactory. Hexagon heads die made to size — not machined. Points machine turned. Tensile strength 75,000-95,000 p.s.i. Carried in stock.

SET SCREWS

Square head and headless — cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.

FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

FLAT HEAD CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

"SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.

*

ADJUSTING SCREWS

Valve tappet adjusting screws — Hexagon head style — to blue print specifications — hexagon head hard; polished if specified — threads soft to close tolerance — points machine turned; flat and chamfered.

CONNECTING ROD BOLTS

Made of alloy steel — heat treated — threads rolled or cut — finished to extremely close thread and body tolerances — body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.

*

SPRING BOLTS

Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.

FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert — steel covered. Finish: plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.

Tapped 1/4" to 3/4" inclusive. Cross section of Ferry patented acorn nut, showing how steel hexagon nut fits snugly into shell.

Pioneers and Recognized Specialists, Cold Upset Screw Products since 1907

STANDARDS carried by LEADING DISTRIBUTORS

*

SPECIALS furnished to BLUE PRINT SPECIFICATIONS

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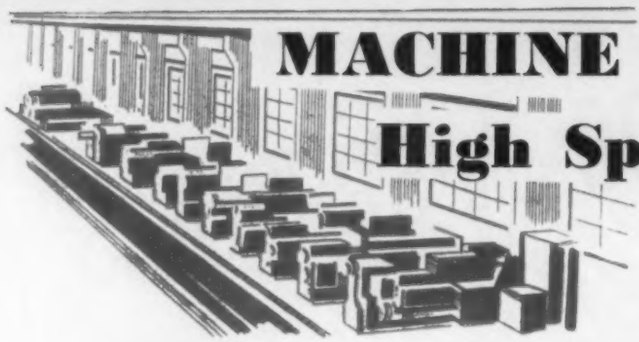

MACHINE TOOL High Spots

Sales Inquiries and Production

Trade expects a good first half in '50 . . . Automobile industry will be a major factor . . . Little government business likely.

by William A. Lloyd

Cleveland — Restrained optimism regarding the first half of 1950 was being voiced this week by spokesmen for major segments of the machine tool industry.

Major factors behind this optimism are—the small but gradual increase in new order volume since the steel strike and statements by steel corporation presidents that the steel industry will operate at capacity during the first half of 1950.

Some spokesmen are predicting that the industry's volume for the first half of 1950 will top the 1948 figures for the corresponding period.

First Half of '50 Will Be Good

Statements of this sort are often meaningless, but it is likely that in the case of the major segments of the machine tool industry they presage a period of the most intensive sales effort seen for many a moon.

As one sales executive put it, "We've got to sell people on cost reduction. It will take time and effort and cost money, but we are going to create some business."

Major sources of 1950 volume are expected to be the automotive industry and general replacement buying. The automatic transmission derby among the automobile companies and decentralization of manufacturing facilities are expected to provide the principal facets of automotive buying.

Little New Business Expected

Replacement buying in other industries such as steel, diesel engines, power industrial trucks, etc., will gain additional impetus as a result of the steel price hike which was announced last week. The problem will be to absorb this increase without a proportionate increase in the price of the finished product.

Other than ECA business, nothing substantial is expected from government sources next year. The aircraft program may provide a few orders but at the present time requirements for the aircraft program are being filled from government-owned machine tool reserves.

The foreign markets for 1950 are a big question mark. Short-term outlook is anything but encouraging and the long-term prospects, if information developed by the machinery committee of the Organization for European Economic Cooperation is any criterion.

In an interim report on the European Recovery Program, the machinery committee points out that increased production of machine tools in Europe will probably have the effect of reducing imports of machine tools from the dollar area.

Studies Production Problems

This preliminary study was made to determine the objectives of each participant in machine tool production and to consider "whether the plans laid down were mutually consistent."

A working party consisting of representatives of Belgium, France, Italy, Switzerland, United Kingdom and Bizone drafted a questionnaire to determine whether machine tool production raised any problems relating either to the quantity or the types of machine tools manufactured.

Conclusions Not Absolute

According to the machinery committee, absence of information on the production of machine tools in the remaining participating countries is not likely to render invalid the conclusions drawn from the study. On the other hand, the conclusions of the machinery committee, it is pointed out, are not absolute, but should be considered merely indications of the probable development of the machine tool industry and the consequences of this development.

The trend of production is as follows:

1938—$424,000,000.
1947—$320,000,000.
1948-49—$370,000,000.
1949-50—$450,000,000.
1952-53—$589,000,000.

Production Increase Expected

The $500 million estimate, however, for 1952-53 assumes exports to non-participating countries to the value of $151 million, a large figure compared with the 1938 figure of $67 million (1948 prices).

"The increase in production will probably have the effect of reducing imports of machine tools from the dollar area; ($47 million in 1952-53 as compared to $74 million in 1949-50) for those participating countries excluding Switzerland.

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Only MARVEL *builds all four**

***HACK SAWING MACHINES**

***BAND SAWING MACHINES**

***BAND SAW BLADES**

***HACK SAW BLADES**

While it is true there are several builders of hack sawing machines and many builders of band sawing machines, only MARVEL builds *BOTH* hack saws and band saws. The fact is that MARVEL manufactures 35 models of 10 basic types of metal sawing machines which include the world's fastest automatic production saw, the world's largest giant hydraulic hack saws, the world's most versatile band saw and the most widely used small shop saws.

With intimate and broad field experience in all types of metal cutting-off equipment and 35 different saws available, it is obvious that MARVEL Field Engineers occupy a unique and exclusive position in the industry. They are eminently qualified to make expert and *unbiased* recommendations covering the type, size and model of metal sawing equipment best suited to individual requirements—the most efficient, most accurate, fastest, broadest in scope and the most economical.

MARVEL is also the only manufacturer of both metal sawing *machines* and metal sawing *blades*. Because the efficiencies of both the machine and the blades are interdependent, each upon the capability of the other, expert knowledge covering both saws and saw blades is essential to the proper appraisal of any specific sawing situation. Correct balance of cutting speed and blade life, feed pressure and blade tension are all potent factors in over-all performance. Here again it is the MARVEL Field Engineer who is qualified to provide the comprehensive answer to your question. His job is to help you saw metal most efficiently—his services are available upon request—gratis.

Write for Catalog 49.

ARMSTRONG-BLUM MFG. CO.
5700 Bloomingdale Ave., Chicago 39, U. S. A.

FREE — USE POST CARD

PUBLICATIONS

New publications that describe money saving equipment and services are available free and without obligation. Copies can be obtained by filling in the attached card and mailing it.

Slide Feeds

The accurate and automatic feeding of coil strip stock into punch presses by the line of U. S. slide and roll feeds and strip handling machinery is described in 13-p. booklet through use of photos, charts and text. *U. S. Tool Co. For more information, check No.* 1 *on the postcard.*

Pivot Punches

Capable of punching metal twice the thickness of the punch diameter, new pivot punch is described in 2-p. new products release. *Pivot Punch & Die Corp. For more information, check No.* 2 *on the postcard.*

Centrifugal Pumps

Claimed to retain and improve on the good features of older La-Bour pumps, but eliminating the contact type seal, the type G La-Bour vertical, self-priming line of centrifugal pumps is described and illustrated in 15-p. bulletin. *LaBour Co. For more information, check No.* 3 *on the postcard.*

Quick-Operating Valves

The design and construction features of general service quick-operating valves are described in 14-p. catalog, with charts and photos. *Everlasting Valve Co. For more information, check No.* 4 *on the postcard.*

Foundry Service

Twelve basic considerations that should govern the selection of a supplier of steel castings are reviewed in 32-p. brochure. *Continental Foundry & Machine Co. For more information, check No.* 5 *on the postcard.*

Fork Trucks

The engineering and operational features of Lewis-Shepard electric and gas-electric fork trucks are presented in 16-p. bulletin. *Lewis-Shepard Products Inc. For more information, check No.* 6 *on the postcard.*

Gun Drills

Hollow gun drills with no dead center, no zero speed area, continuous piloting at the cutting point, and rigid shank construction for precision deep-hole drilling are described in 4-p. illustrated folder. *National Twist Drill & Tool Co. For more information, check No.* 7 *on the postcard.*

Concrete Floors

Masterplate Iron-Clad concrete floors claimed to be 5 to 6 times more wear resistant than a normal concrete floor, spark resistant, static disseminating, non-dusting, corrosion resistant, easy to clean, and economical are described in 36-p. illustrated booklet. *Master Builders Co. For more information, check No.* 8 *on the postcard.*

Trench Digger

Designed for fast and profitable handling of small digging assignments, the one-man operated Trenchmobile travels under its own power and is equipped with pneumatic tires. *Parsons Co. For more information, check No.* 9 *on the postcard.*

Manufacturing Facilities

The research, engineering, foundry, finishing, assembly and sales facilities of this bearing and casting manufacturing firm are described in 27-p. illustrated catalog. *American Brake Shoe Co., National Bearing Div. For more information, check No.* 10 *on the postcard*

Turning Vane

Bulletin 30 describes the Turnotrol turning vane for balancing heating, ventilating, and air conditioning systems. *Anemostat Corp. For more information, check No.* 11 *on the postcard.*

Vibrating Conveyer

The Jeffrey MV mechanical vibrating conveyer consisting of a pan or tube conveyer deck mounted on cantilever spring bars, two beam supports, a cantilevered coun-

Turn to Page 113

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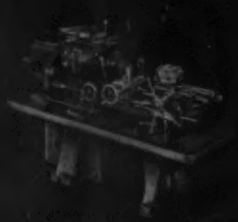
NO. 1 ELECTRIC
½" BAR CAPACITY, 11" SWING

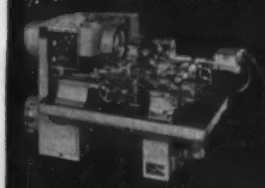
NO. 2 ELECTRIC
1" BAR CAPACITY, 14" SWING



NO. 2 ALL GEARED HEAD
1" BAR CAPACITY, 14" SWING

NO. 2 ELECTRO-CYCLE
1" BAR CAPACITY, 14" SWING

NO. 3 UNIVERSAL
1½" BAR CAPACITY, 15⅜" SWING



NO. 3 ELECTRO-CYCLE
1½" BAR CAPACITY, 15⅜" SWING

16" ELECTRO-CYCLE
1½" BAR CAPACITY, 16⅞" SWING

NO. 4 UNIVERSAL
2" BAR CAPACITY, 18⅛" SWING

NO. 5 UNIVERSAL
2½" BAR CAPACITY, 20" SWING

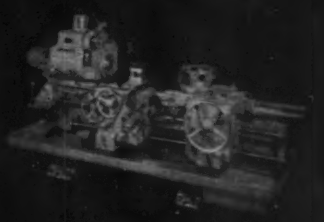
SINGLE SPINDLE AUTOMATIC CHUCKING
8" OR 10" CHUCK, 6" TURNING LENGTH

Warner & Swasey
Sells one thing...
INCREASED PRODUCTION

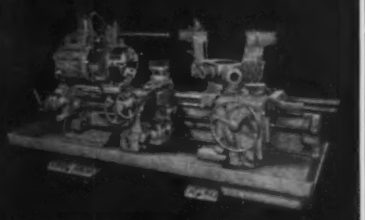
- When you buy a Warner & Swasey, you buy increased production—greater output at lower cost.

The power, rigidity, accuracy, and ease of operation built into each Warner & Swasey all add up to a greater return on your investment.

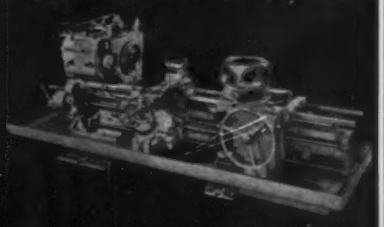
You can machine it better, faster, for less ...with a Warner & Swasey



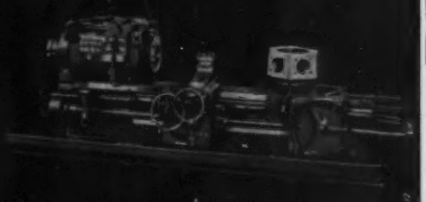
1-A UNIVERSAL HEAVY DUTY
2½" OR 3" BAR CAPACITY, 16¼" SWING



2-A UNIVERSAL HEAVY DUTY
3½" BAR CAPACITY, 20" SWING

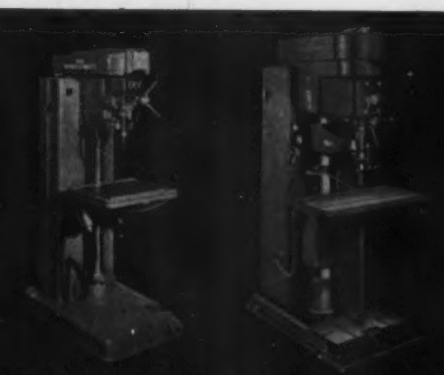


3-A UNIVERSAL HEAVY DUTY
4½" OR 6" BAR CAPACITY, 23½" SWING



4-A UNIVERSAL HEAVY DUTY
8", 9" OR 12" BAR CAPACITY, 28⅛" SWING

NO. 10 TAPPING MACHINE
CAPACITY 0-80 TO 10-24



NO. 11 TAPPING MACHINE
CAPACITY 8-36 TO ⅞"

NO. 12 TAPPING MACHINE
CAPACITY ⅜" TO 2½"

5-SPINDLE AUTOMATIC BAR MACHINES
1¾" STANDARD BAR CAPACITY
2¼" OVERSIZE CAPACITY

5-SPINDLE AUTOMATIC CHUCKING MACHINE
6" SWING

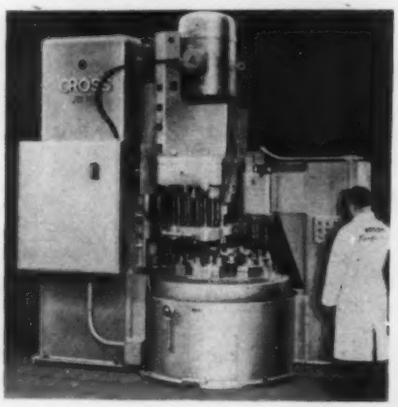
TURRET LATHES, MULTIPLE & SINGLE SPINDLE AUTOMATICS, PRECISION TAPPING AND THREADING MACHINES

WARNER & SWASEY
Machine Tools
Cleveland

and die arrangement of five high carbon, high chrome cutting blades is said to permit work of punch work accuracy and quality. Four lower blades arranged in a rectangular shape to form a die, provide a maximum support for the shearing action of the fifth or upper blade as it is brought down through the metal and into the cavity formed by the lower blades. All five blades are adjustable. A slot 2½ in. long x ⅛ in. wide can be cut at one stroke of the unit. *Beverly Shear Mfg. Co. For more information, check No.* 27 *on the postcard on p.* 35.

Transfer Machine

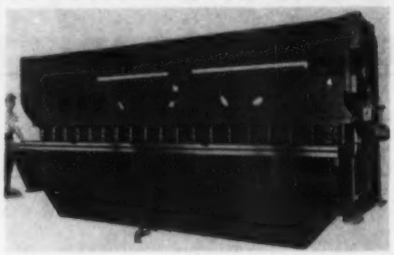
Claimed to drill, tap, ream, and counter-bore 75 parts per hr at 100 pct efficiency, a new automatic cycle machine tool for machining planetary gear cages performs multiple operations on opposite sides of the part simultaneously in each station by double loading. Power clamp-



ing is provided for the work-holding fixtures. The index table is a 6-station, fluid drive type. The machine sets the pace for the operator who loads and unloads while the machine is cutting. *Cross Co. For more information, check No.* 28 *on the postcard on p.* 35.

Steelweld Shear

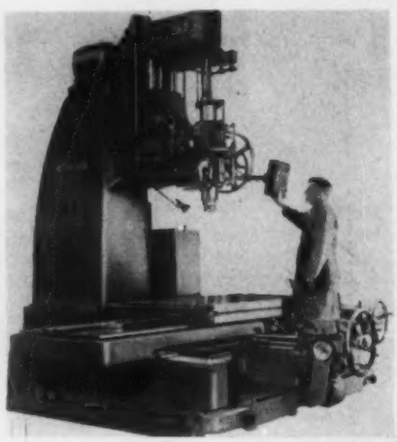
The longest Steelweld shear built to date has a shearing capacity of 18 ft of 3/16-in. mild steel at 50 strokes per min and operates on the pivoted-blade principle. The blade travels in a circular path without the use of guides and slides. Ball bearing transfers in the bed facilitate movement of steel through the knives. Shearing action is controlled by an electrically operated



foot switch. A motor-operated back gage at middle front of the machine simplifies the positioning of material to be cut. Knife clearance to suit plate thickness is adjusted by a handcrank and a large dial indicator. *Cleveland Crane & Engineering Co. For more information, check No.* 29 *on the postcard on p.* 35.

Vertical Jig Borer

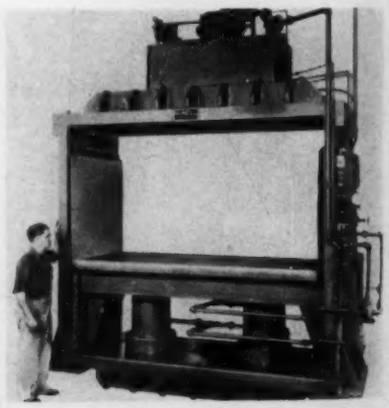
A vertical type jig borer, said to be the largest ever built, is capable of locating and boring to 0.0001 in. accuracy with a work load of 2½



tons. The new 15-ton precision machine is the No. 4-E, and its open-side construction provides convenience in placing and holding a wide range of work. The machine has a 36 x 72 in. rectangular table with longitudinal travel 60 in. and transverse travel 36 in. The maximum standard height from table top to spindle nose is 33 in.; but columns 6, 10, and 14 in. higher than standard can be furnished, increasing the vertical capacity to a maximum of 47 in. A combination rectangular and built-in 42 in. diam rotary table, or a built-in 48-in. rotary table, can be furnished in place of the plain rectangular table. Tools as large as No. 5 Morse taper are held in the spindle with collets and a spindle nose cap. The 5½ in. diam hardened, ground and lapped quill has a 1-in. vertical travel with power feeds (both up and down) ranging from 0.0005 to 0.015 ipr of the spindle. An adjustable dial indicator depth gage with positive stop is built into the spindle head for accurate boring to depth. Electrical controls of the primary functions of the machine are concentrated in a pendant control station. *Pratt & Whitney, Division Niles-Bement-Pond Co. For more information, check No.* 30 *on the postcard on p.* 35.

Hydraulic Press

Flexibility in design and operation features the new Bunell universal hydraulic press, that can handle a wide variety of testing and



production jobs. Individual specifications on die space, die opening, stroke, pressure and number of hydraulic cylinders can easily be met. Very light or very great pressure capacities can be built into individual presses. Two-way hydraulic cylinders are used, so that pressure can be applied in either direction of the ram movement. Finger-tip control regulates the final pressure required. Controlled downward movement of the ram makes it possible to stop at any de-

Turn to Page 114

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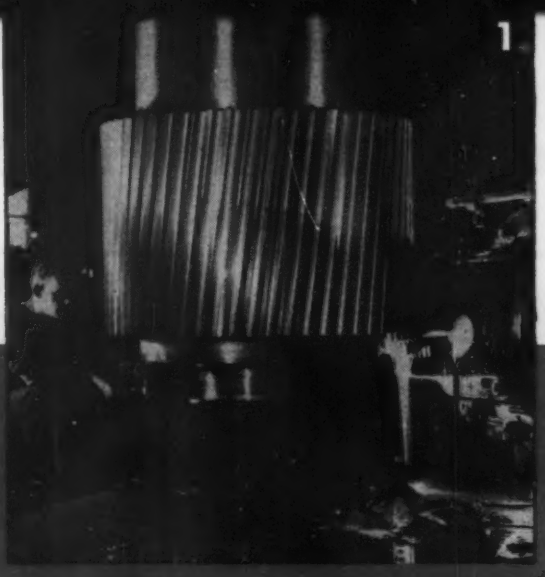
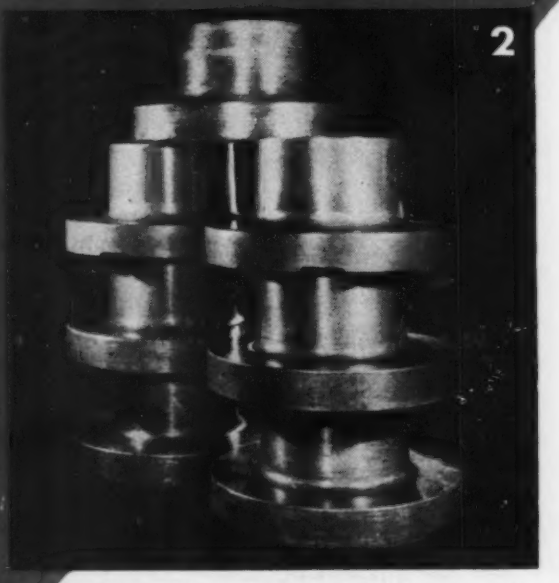
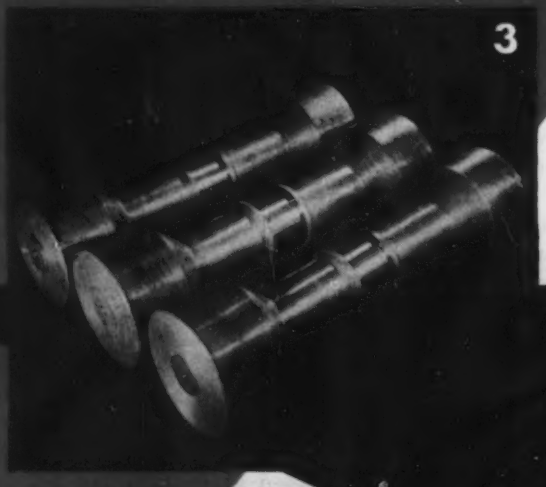
MESTA Forgings

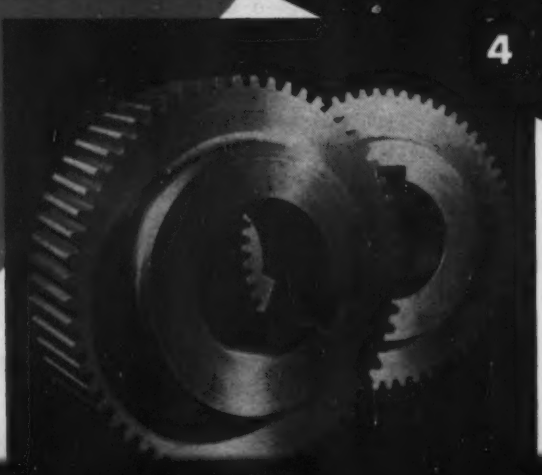
From the selection of raw materials to the accurately machined finished product, every step in the manufacture of Mesta forgings is under rigid control to assure consistent high quality. Mesta Forge Shops produce carbon and alloy steel forgings in all sizes, up to the largest used by industry.

Write for descriptive forging literature.









1 Forged steel single helical cut tooth pinion for vertical edging aluminum rolling mill.

2 Group of forged steel coupling halves.

3 Group of semifinished forged steel spindles for four-high continuous strip mill.

4 Forged steel gears for four-high skin pass mill feed reel.

MESTA MACHINE CO.
PITTSBURGH, PA.

On the ASSEMBLY LINE

AUTOMOTIVE NEWS AND OPINIONS

Oldsmobile has a big week . . . Cuts prices on the "88", shows its new models and new assembly plant to newsmen . . . Buick passes the 400,000 mark . . . Chrysler previews its new models.

by Walter G. Patton

Lansing—Oldsmobile established several records here this week when it (1) announced its new "98" model for 1950 utilizing the new GM "B" body, (2) confirmed a cut of $55 to $65 in the price of its series "88" models for 1950, (3) showed a large group of press representatives its new assembly plant in its first day of operation. This may be the first time an automobile firm has permitted a large group of visitors from the press in an assembly plant just as new models are beginning to trickle down the line. The fact that the Olds assembly plant is also spanking new made this week's visit a memorable occasion.

Only one Oldsmobile model for 1950, the "98," will have an entirely new body. The new body is slightly larger than the previous 1949 GM "C" body which it replaces although it is about 30 lb lighter. The same basic body will be used on one of the Cadillac cars to be introduced later.

Uses Separate Rear Fenders

The most important change in the Oldsmobile body for 1950 is the use of separate rear fenders instead of a fender that is integral with the body. Apparently, GM car designers have concluded there are some advantages in mounting the rear fender as a separate unit.

Other design changes are important although not extensive. Changes have been made in the fender line, grille, hood ornament, lighting fixtures and exterior trim. The new body features an entirely new tail lamp assembly and molding. The latest light assemblies are simple and unobtrusive. The front of the hood and the front fenders have been lowered appreciably.

Changes Hydra-Matic Drive

Most significant engineering change in the car has been made in the Hydra-Matic drive. As a result of changes in valving, line pressures are now reduced when starting the car from 80 to 65 lb. This provides for modulated control and smooth starts. Improved control of hydraulic pressures also account for smoother shifting of the gears.

In the new Whirl-away Hydra-Matic, low gear is eliminated on starting. This minimizes the possibility of wheel slip on sand or ice. For the present, Oldsmobile will be the only GM car equipped with this feature.

Olds Assembly Plant Planned With Three-Dimensional Models

As in the case of the Kettering engine plant, the new Oldsmobile assembly plant has been planned from start to finish with the aid of small, three-dimensional scale models. One result of this planning is that the layout never appears crowded. Particular attention has been given to things like conveyer height, feeding parts to the operator at the proper level and split-second timing of operations.

Introduces New Features

The net result is that Olds has one of the cleanest assembly layouts in the industry today. It would be surprising if this new plant, rated at 80 cars per hr, does not turn out to be the most efficient in the industry.

The new assembly building comprises more than half a million sq ft of working area. During the war the building was used to produce rocket shells. More recently it has been used as a warehouse.

Among the outstanding features of the new Olds assembly plant

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COST COMPARISON CHART

Neapco Products Inc.
Pottstown, Pennsylvania

	FORMER METHOD	WHEELABRATOR METHOD
MACHINE	Acid pickling	20" x 27" WATB (2 cu. ft. capacity)
PRODUCTION	10 tons per month	20 tons per month
LABOR	8 man hours daily	5½ man hours daily
CLEANING COST	$38.12 per ton	$10.83 per ton

SAVINGS

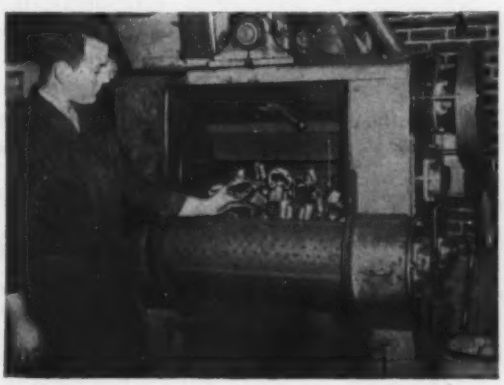
Per Ton	Per Month	Per Year
$27.29	**$545.70**	**$6548.40**

WHEELABRATOR®
Saves
$6,548.00

Pays for itself TWICE in one year.

Neapco Products Inc., Pottstown, Pa. buys one Wheelabrator Tumblast - Saves cost of two machines in first year

The manufacturers of the "Neapco" line of universal joints and drives joined thousands of other Wheelabrator users in discovering how to clean parts better and faster at lower cost. The Tumblast method actually lowered cleaning costs by 65%, and permitted them to add more jobs to the cleaning list. This means increased profit, more salable products and a challenge to competition. As an extra bonus, not included in their saving figures, parts previously sent out for cleaning at 3¢ each, are now cleaned in 100 lots in five minutes at a total cost of 16¢.



Wheelabrator uses centrifugal force to hurl abrasive, uses less power, costs less to operate. It scours every trace of sand and scale from the most intricate parts. Machining and grinding are faster, tools last longer, inspection is easier and quicker. Find out about the advantages Wheelabrator cleaning offers you. Send today, for our new free brochure.

New, informative book gives complete, concise information on all phases of airless blast cleaning. Write today for Catalog No. 74-A.

American
WHEELABRATOR & EQUIPMENT CORP.
510 S. Byrkit St., Mishawaka 3, Indiana

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

POPULAR OLDSMOBILE: Featuring a brand new Fisher body, the 1950 Series "98" Futuramic Oldsmobile was exhibited to the public last week. In addition to extensive changes in body dies, the new car features a redesigned grille, new hood ornament, and fender moldings. Interior trim has been extensively redesigned and the whirlaway Hydra-Matic drive, optional in this series, has been reengineered to improve smoothness of operation, faster shifting into reverse and longer tire life.

are: (1) Side transfer of cars from one assembly line to another making it unnecessary to drive the cars until they have passed final inspection; (2) a new method in which two halves of a gas tank move on edge on two assembly lines, are brought together automatically on a single line and tack-welded ready for the final seam weld which is made on an automatic machine; and (3) some ingenious new hooks that automatically pick up and discharge an automobile tire and wheel assembly.

Olds has installed a considerable amount of new equipment to facilitate quality control. The new assembly line also features a central control board which follows simultaneously through a series of lights the operation of each individual assembly line in the entire plant. Trouble on any line can be spotted in a split second. Incidentally, all Oldsmobile assembly belts are equipped with spare motors which can be thrown on the line immediately in case of a motor breakdown.

Will Concentrate on "88" Model

Escalators move the personnel between the first and second floors.

Grilles and radiators are now assembled on a Merry-go-round which carries the assembly fixtures; the operators no longer have to walk around the parts to do their work.

In 1950 Olds will concentrate on its popular "88" model which is expected to account for more than half of the total production. The company is planning to assemble a minimum of 350,000 units during the year.

Emphasis on sales of the "88" plus the desire to make the model more strongly competitive were undoubtedly responsible for the price reduction of $55 to $65. In addition, Olds is deleting a considerable amount of equipment from its base price. This move makes possible the announcement of the lowest possible price at Lansing. Similar pricing policies have been adopted by other car manufacturers. This is a trend that can be expected to characterize all auto pricing in 1950.

Buick Plans Full Production

Buick plans to be back in full production early in January, Ivan L. Wiles, general manager, disclosed at a preview of the 1950 models held recently in Detroit. Output in 1949 will top 400,000 units, Mr. Wiles said. Production schedules at Buick during the early months of 1950 will be at an all-time high, it was revealed.

Mr. Wiles indicated that the 1950 Buick Super will be powered by a power plant rated at 128 hp at 3600 rpm. The increase from 120 hp has been accomplished by increasing the bore and shortening the stroke.

Buick's success with its automatic Dynaflow transmission is indicated by the fact that the company is now the largest producer of such devices in the industry. During the past year, 71 pct of all Buicks sold were equipped with Dynaflow.

Chrysler Previews Its Models

A strong defense of his company's reluctance to join the automotive parade toward what he called "non-functional" styling was given this week by K. T. Keller, president of Chrysler Corp., who introduced the new lines of Chrysler cars to 500 newspapermen at a press review on Dec. 15.

The new cars retain the outstanding features of the 1949 series: Ample headroom, easy to get in and out, and what are generally conceded to be "the most comfortable seats in the industry."

From an appearance standpoint, the new cars represent a substantial change while retaiinng the major characteristics of the 1949 cars. The bumpers, front and rear, are new design. Front grilles are much lower. Rear window area has been increased 33 pct. The rear tread has been increased 2½ in., permitting a new and broader rear fender design. Trim moldings are entirely new. Lighting assemblies have been completely redesigned, replacing the prominent spotlight and tail light assemblies used on 1949 Chrysler models. Styling and engineering details of the new cars will be given in next week's Assembly Line.

Elect Detroit Scrap Officers

The Greater Detroit Scrap Trade Association have elected the following new officers for next year: Daniel Silverman, president; Louis Vineberg, first vice-president; Lewis J. Stern, second vice-president; Louis Wonboy, financial secretary; Samuel S. Schwartzberg, recording secretary; Irving Bean, treasurer.

The following will be members of the board of directors: Alvin Wasserman, J. L. Wolock, Henry Miller, Theodore F. Mason, Louis Alpert and Leo Borden.

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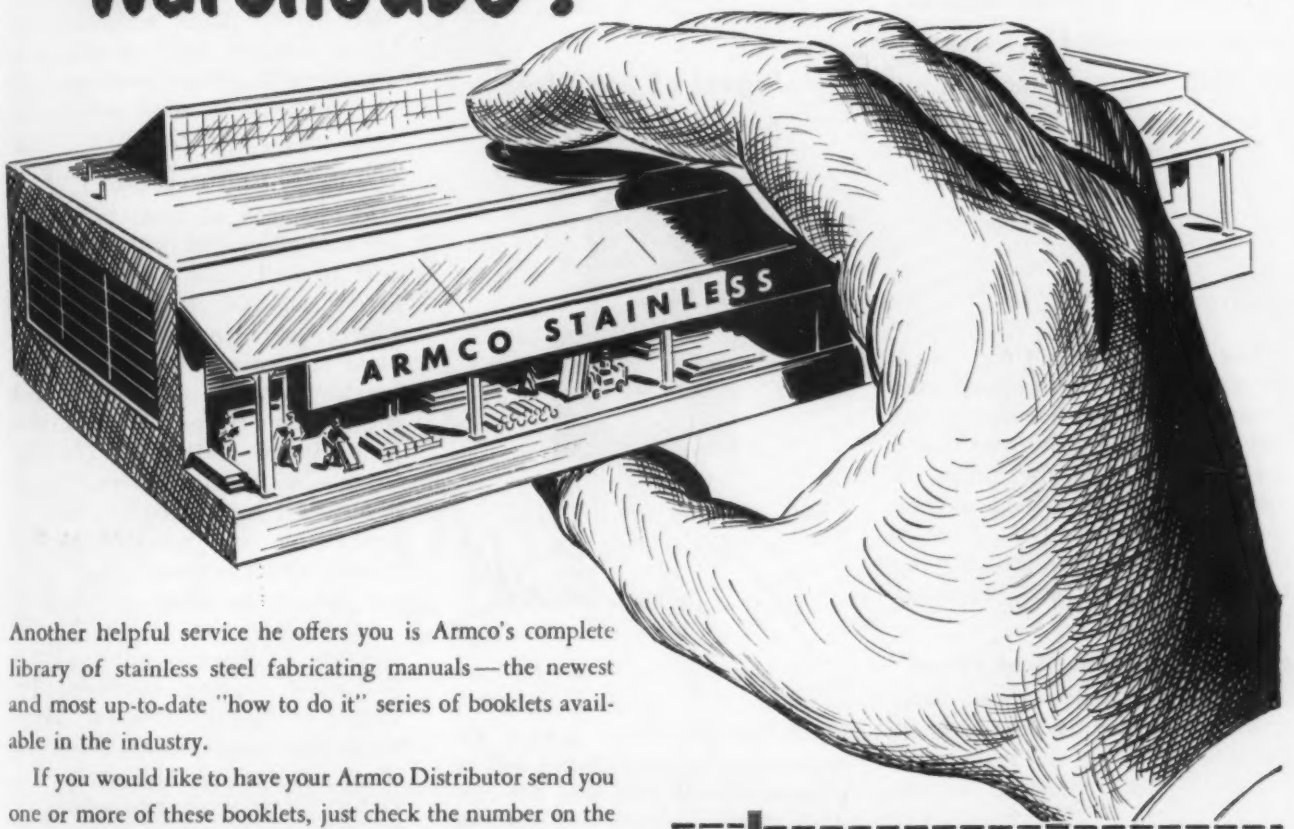
Your Armco Distributor is ready to give you *complete* service. He stocks all the popular types of Armco Stainless Steel sheets, bars, plates, angles and fasteners. If you need special grades he can obtain them for you quickly.



Another helpful service he offers you is Armco's complete library of stainless steel fabricating manuals—the newest and most up-to-date "how to do it" series of booklets available in the industry.

If you would like to have your Armco Distributor send you one or more of these booklets, just check the number on the coupon that corresponds to the number listed here:

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WEST COAST PROGRESS REPORT

Columbia Steel increases prices . . . Western air frame manufacturers encouraged . . . Manganese oxide to be produced.

Digest of Far West Industrial Activity

by J. Reinhardt

San Francisco — While it is know that all of the western steel producers have been busy for the last month or more attempting to arrive at new selling prices in view of increased production costs, Columbia Steel Co., U. S. Steel Corp. subsidiary, was the only one to announce their new prices up to last week.

Kaiser, Bethlehem Hold Prices

Buyers who have been well aware of impending increases, in general were not too much perturbed at the announced boosts. Prices posted by Columbia f.o.b. Torrance, Calif., quoted increases of $3.00 a ton on standard structural shapes; $2.00 per ton for bars; $2.00 a ton for hot-rolled sheets (18 gage and heavier); and $7.00 per ton for bright basic wire. Similar increases went into effect at the Pittsburg, Calif., plant and there cold-rolled sheets also went up $1.00 a ton while electrolytic tinplate was actually reduced 10¢ per 100 lb for 0.25 lb and 0.50 lb coating and 15¢ per 100 lb for 0.75 lb coating.

The two other major western producers—Kaiser Steel Corp. and Bethlehem Pacific — have announced no price changes but in substance state that they are considering the situation and are well aware of increased operating costs.

California producers late last week were given another bit of encouragement toward expanding marketing areas when railroads serving the West approved the same rates which have been in effect between Utah and California. In other words general iron and steel products can move from California to the Utah market at approximately 63¢ per 100 lb as soon as the rates are posted which is expected to be within 30 days.

The former rate was 91¢ per 100 lb. Obviously this will give California producers a better opportunity to compete with Geneva Steel Co. in Utah although the latter company still maintains a considerable advantage because of its proximity to steel consuming areas of that state.

ICC Holds Rail Hearing

Traffic men of steel producers are also interested in the hearings held in Salt Lake City last week before an ICC examiner where efforts are being made to eliminate the rate bottleneck at the junction between the Denver and Rio Grande and Western and Union Pacific Railroads. The Rio Grande has asked the commission to establish rates which would be competitive on transcontinental freight which is transferred from one line to the other via Oregon.

At present the Union Pacific controls shipments out of the Northwest moving eastward by virtue of transcontinental rates which are well below those in effect on freight hauled from Idaho, Washington and parts of Oregon into Ogden and then rerouted over Denver and Rio Grande eastward. The Union Pacific has taken the position that because they built lines into the Pacific Northwest and opened up considerable freight volume in that territory they are entitled to the lion's share of freight movement.

Discusses Geneva's Tax Bill

Sale Lake City—The total tax bill levied against each ton of steel produced by Geneva Steel Co. in Utah is approximately the same as

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Beginning a New Year
When you deal with us, you get Service Plus!
1950
There is always something refreshing about beginning a new year. Yesterday's difficulties and troubles are soon forgotten, but on the other hand, yesterday's progress becomes a "plus factor" that we gratefully carry with us into the new year.
In reviewing our progress during 1949, we find that two new warehouses got off to a good start in Seattle, Washington, and Portland, Oregon. Facilities for fabricating reinforcing bars were placed in operation in several districts. Aircraft Alloy Steels were added to meet increasing requirements of aircraft industries. And, to more completely satisfy the metal requirements of all our customers, Reynolds Lifetime Aluminum products were made available through many of our warehouses. This expansion, both product and area-wise will improve service to steel users in all parts of the country.
To us, good service has come to mean . . . a warehouse or sales office near your place of business; complete and diversified stocks for your every need; modern facilities for cutting, processing and handling materials; fast efficient delivery service . . . and a staff who knows their business. These are the kind of advantages that so many of our customers have termed "Service Plus."
We take this occasion to extend to you our best wishes for a happy and prosperous New Year.

UNITED STATES STEEL SUPPLY COMPANY

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CLEVELAND · LOS ANGELES · MILWAUKEE · MOLINE, ILL. · NEWARK · PITTSBURGH
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Also Sales Offices at: KANSAS CITY, MO. · PHILADELPHIA · TOLEDO · TULSA · YOUNGSTOWN
Headquarters Offices: 208 S. La Salle St.—Chicago 4, Ill.

USS

UNITED STATES STEEL

WATER SERVES ITS PURPOSE: These immense pipes for the Columbia Basin Project irrigation system of eastern Washington are receiving their protective coating of reinforced concrete. Water from this reservoir will be boosted upward approximately 280 ft. and through these pipes into a canal to begin its 50-mile journey to the first irrigable land in the project. Each of the pipes shown here can handle enough water for 100,000 acres of land.

the average imposed upon the production of U. S. Steel Corp. subsidiaries in other states, according to Dr. Walther Mathesius, president of Geneva.

The comparative study was made, Dr. Mathesius told a group of tax officials and students at the University of Utah recently, to determine if the steel industry in the state is paying a fair share of local and state taxes.

His conclusion from the analysis:

"The levying of any additional taxes upon Utah industry of the type represented by Geneva and Columbia Iron Mining Co. operations would constitute a competitive disadvantage which could only have adverse effects upon Utah's tax levies might be paralleled by corresponding increases in competitor states."

The Geneva president said he would be interested to know the total state and local tax bill paid by Geneva's competitors in other states, especially in the West. And, perhaps because he thought the competitors might be equally interested in Geneva's tax costs.

Western Aircraft Firms Expect Government Business

Los Angeles—Even before official announcements were made, preliminary indications were that aircraft firms in the West would receive a major share of new contracts.

Expected were orders for North American for 121 of the F-86A model of the Sabre and 124 of the F-88D model. Lockheed would get orders for 178 of the F94 two-seater night fighters, according to Air Force spokesmen. It also would sell 125 T-33 Shooting Star jet trainers.

Douglas is in line for 36 of the big C-124 transports, and Northrop would be asked to make 27 of its F-89 Scorpion two-engine night fighters which are equipped with radar. An additional order of 125 T-28 flight trainers is expected to go to North American.

Up in Seattle, Boeing Airplane Co. looks forward to millions of dollars worth of new business on the basis of statements made by Senator Warren G. Magnusson to the effect that the Seattle plants of Boeing are expected to build the new B-52 jet bomber.

At San Diego the Ryan Aeronautical Co. has announced that during 1950 the company will produce three new Navion planes to be known as. "Super 260," "De Luxe 205," and the "Utility 205," at prices ranging from $9485 to $13,985.

Will Produce Manganese Concentrate from Low-Grade Ores

Seattle — Manganese Products, Inc., which recently purchased the alumina plant at Salem, Ore. from the WAA for $750,000, expects to begin producing manganese concentrate from low-grade domestic manganese ores within the next several weeks.

Quantity production is expected to be reached early in the spring when the chemical processes will be fully developed. Manganese Products has principally been concerned with research until recently with many of the company's experiments being carried out at the University of Washington under the direction of Dr. R. W. Moulton who is an assistant professor of chemical engineering and a technical director of the firm.

President of the company is John R. Allen, a resident of Seattle. According to company officials the federal government will contract for production from their firm and from several others strategically located throughout the nation. All of these companies are expected to produce the manganese oxide by the same process.

It is understood that Pacific Northwest Alloys Co. which has been operating the electric furnaces near Mead, Wash., which were used during the war to produce magnesium, will also begin the production of ferromanganese. This company has been producing ferroalloys but was closed down during the steel strike and only recently got back into production. At the height of production 130 men were employed. Leo H. Timmins is the president.

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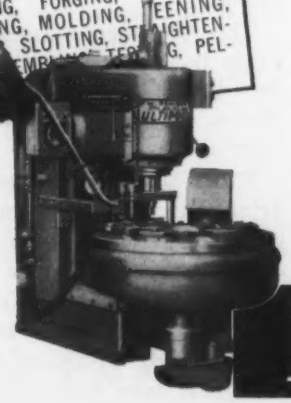
Ends Pile-up Damage
Automatic ram reversal at preset pressure limit prevents pile-up damage to parts or dies, in blanking parts for permanent wave machines. Fully adjustable ram stroke simplifies and speeds job change-over.
EMBOSSING
Ends Leather Pre-soaking
Multipress cuts costs and saves time for shoe manufacturer. User likes easy adjustment of time-delay for heat and pressure application . . . better results . . . safe operation.
TRIMMING
Die Wear Reduced
In removing flash from cast metal parts, Multipress user says pressure control is big aid to longer die life, fewer rejects. Operators remain seated, do more work, with less fatigue.
STAKING
Boosts Production 230%
Multipress speeds assembly of 4-part counter wheels for voting machines. Automatic indexing and smooth ram action meet need for high accuracy, cut scrap loss, increase safety.

Quality goes up, costs go down when you use MULTIPRESS

REG. U.S. PAT. OFF.

This Typical MULTIPRESS equipped with indexing table, special tooling fixtures and hopper feeds, is used by one of the world's largest makers of electric appliances, for RIVETING silver contacts on brass and spring steel contact arms.

Multipress also cuts costs on many other jobs, such as CLEANING, [illegible]NCHING, FORGING, [illegible]IBBLING, [illegible]ING, MOLDING, [illegible]EENING, SLOTTING, ST[illegible]IGHTEN-[illegible]G, PEL-



You'll find many other proved ways to let Multipress boost production, cut costs, save time and improve quality on your own operations. Typical applications above are only a small part of the Multipress story. Other users tell of doubling and tripling production . . . cutting rejects to a fraction of the old rate . . . eliminating one or more complete operations . . . solving stubborn production problems, and so on. There are good reasons for this. In addition to basic advantages of oil-smooth, hydraulic action, Multipress offers other unique engineering features. Owners and operators *both* like its safer, simpler, easier, more accurate operation.

Multipress is available in a *complete* range of sizes and capacities from one to 35 tons. Widely interchangeable accessories, controls, and other features can be "tailor-made" to fit your requirements. Write for full information.

The DENISON Engineering Co., 1158 Dublin Rd., Columbus 16, O.

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Ask to see our MOVIE

See Multipress in action . . . how it works . . . how others use it!

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THE FEDERAL VIEW

THIS WEEK IN WASHINGTON

Aims to obtain better understanding between business and government . . . Congress will act on Marshall Plan appropriations . . . Unified transportation program urged.

by Eugene J. Hardy

Washington — Concrete effects of Commerce Secretary Sawyer's campaign to improve relations between government and business are not likely to appear for many months. Conflicts between the various agencies will first have to be resolved and considerable fact finding on both legislative and administrative problems completed before Mr. Sawyer can present a coordinated program to the President.

Will Report to Truman

Despite claims that this program has no motives other than those in the political realm, Mr. Sawyer is sincere in his efforts to obtain a better understanding between business and government. He managed to sell the idea to the President on this basis.

The President expects to get from Mr. Sawyer a clear-cut program regarding government activities as they affect the business community. Mr. Sawyer has set up an inter-agency committee consisting of the Attorney General and the acting chairman of the Federal Trade Commission and the Council of Economic Advisers. This group called "The President's Committee on Business and Government Relations" has held two organizational meetings.

Mr. Sawyer has long held the conviction that there is a need for more coordination in the attitude of the various government agencies concerned with business matters. He became further convinced of this need as a result of recent talks with businessmen throughout the country. Coincidentally, it was also two actions of the steel industry which helped to convince Mr. Sawyer that something had to be done. The first of these was the industry's switch to f.o.b. mill pricing as a result of the Supreme Court's decision in the cement case.

Business Views Expressed

With FTC unable to agree on a proper course of action in the field of delivered prices and the Justice Dept. holding still another viewpoint, Mr. Sawyer issued a statement emphasizing the need for clarification. The other factor was the voluntary allocation plan for distribution of steel to essential industries. This program, administered by the Commerce Dept., proved to Mr. Sawyer that business would cooperate with government, if there was a definite need.

On his recent trips, lawyers and businessmen emphasized to Mr. Sawyer that they never knew when the government would step in with court action against practices that they had been carrying on for many years. Attempts at voluntary action to secure compliance with government requirements are not necessarily new, in fact, the Commerce Dept. tried once before in the mid 1930's, but with more and more confusion resulting from court decisions in recent years, the need for some such program is urgent.

Then too, support for such a program has consistently been asked for by FTC chairman, Lowell Mason, a member of Mr. Sawyer's inter-agency committee.

What Mr. Sawyer seems to be driving at is a reassessment of the government's over-all policy toward competition, monopolies, and restraint of trade based on current economic conditions rather than those which prevailed when the anti-trust laws were first enacted.

SUNVIS GOING STRONG AFTER 3,500 HOURS

Body-Stamping Presses Still in A-1 Condition; Make-Up Oil Amounts to Only 1% per Month

One of the best-known automobile manufacturers selected Sunvis to lubricate three brand-new body-stamping presses. This equipment involved a big investment, and the company wanted the finest protection available.

After 15 months' use, the oil was tested and found to be in virtually the same condition as at the start. The machines were carefully examined and proved to be as good as new. The original charge of Sunvis is still in service and make-up oil has amounted to only one percent per month.

Because of performance like this, "Job Proved" Sunvis Oils are in wide demand wherever the finest lubrication is needed. They have high stability over a wide range of speeds, loads, and temperatures. You can count on Sunvis Oils for top performance and the surest protection of your machines. For full information call your nearest Sun Office.

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This new policy will have to determine whether the government actually does regard bigness in business illegal per se. It will have to attempt to minimize the conflict in existing anti-trust laws. It will also attempt to encourage competition and end abuses by voluntary means rather than through court action. The government's own policies on such matters as taxes, subsidies, and regulatory agencies will also be studied to determine whether they are fostering monopolies.

M-P Appropriations Due For Rough Sledding in Congress

There is little doubt that from here on in the Marshall Plan is in for rougher sledding in Congress. There may even be sharper pruning in the next appropriations bill.

But even if no more funds at all were to be forthcoming, European industry would continue to benefit from the ECA program for another 2 years or more. This is because large commitments have already been made out of current appropriations for long-range projects.

For instance, the ECA has approved a number of special industrial projects aimed at both modernization and new construction. These range from drug factories to steel mills, from power stations to automobile factories. These special projects alone will require an investment equivalent to $1.4 billion over the next 2 or 3 years.

ECA Provides One-Third

Dollarwise, nearly half, or $650 million, involves expansion of steel production facilities, primarily in France and the United Kingdom. Another $200 million will go into mining enterprises including $45 million for iron ore and $55 million for coal.

Only about a third of the $1.4 billion will be provided by the ECA. This will go largely for machinery and equipment, of which about 80 pct will be made and shipped by U. S. suppliers.

This figure, however, is only for the so-called special projects. From the overall viewpoint, Marshall Plan commitments affecting basic European industry in terms of procurement authorizations already run to a much larger figure—about $3.4 billion.

Through October, only about 65 pct or $2.2 billion of these authorizations had actually been shipped. A substantial portion of the shipments has been of materials for which an immediate use could be made. Many of the remaining commodities, such as steel mill equipment or machine tools, because of the long-range nature of the projects, may not be ready or even needed until 1952.

Trucks, Barges May Benefit In New Transportation Setup

Shipments of steel products and other commodities which now move by rail because of abnormally low, "out-of-pocket" rates may be diverted to trucks and barges soon.

This diversion would come about if Congress and the Interstate Commerce Comission act favorably on a recomendation made by Secretary of Commerce Sawyer last week in a report to President Truman on the issues involved in a unified and coordinated federal program for transportation.

The nation's railroads, in an attempt to prevent diversion of some types of freight traffic to trucks, barges, planes and pipelines, have for years maintained below-cost rates on a number of commodities. Such rates have been sanctioned by the ICC and other regulatory agencies on the theory that the railroads must be maintained from a "national defense" point of view of "long-range maintenance of adequate transportation."

Defends Unjustified Rates

"It is recognized," Mr. Sawyer observes, "that there are occasional situations where rates which fail to cover all costs are justified, but departures from cost standards should be permitted only upon a convincing show of necessity for the promotion of traffic or conservation of the carrier's revenues, not at the expense of competing carriers qualified to perform the service more economically, nor in cases where discrimination would result."

Let competition determine the type of carrier a shipper will use, Mr. Sawyer urges.

THE BULL OF THE WOODS — By J. R. Williams

AS YOU GO BY, TAKE A LOOK AT THAT PIECE THERE ON TH' FLOOR-- IT'S KINDA UNIQUE!
TH' GUY DRILLED A HOLE A LITTLE OFF AND THE JOKESTERS ARE TRYIN' TO MAKE IT LOOK LIKE IT WAS SUCH A BIG BLUNDER THAT TH' HULL SHOP KNOWS IT IN FIVE MINUTES!
WELL, THEY'RE GETTIN' MORE INTELLECTUAL-- THEY USED TO THINK IT WAS HILARIOUSLY FUNNY TO PUT CUP GREASE ON TH' SWEEPER'S WHEELBARROW HANDLES!
T. M. REG. U. S. PAT. OFF. COPR. 1949 BY NEA SERVICE, INC.
IMPROVED METHODS
12-23 J.R.WILLIAMS

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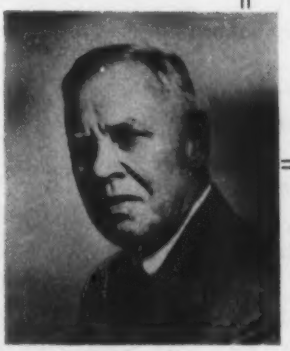
IRON AGE
FOUNDED 1855
FEATURE ARTICLE

Scovill's Continuous Brass Mill —the world's most modern mill

The entire Scovill organization is proud of its new continuous strip mill and the product it makes. The mill, built at a cost of more than $10 million, has many unique features and is the most modern and completely integrated brass cold rolling operation in the world. Its preliminary operation is the casting of brass bars in a continuous flat metal casting machine, the processing of which stems from research and experiment by us, and is an important advance in brass mill technique. From bars so made, these great new mills and handling devices produce sheet and strip brass of a quality and uniformity and economy of use for manufacturing not heretofore available.

Statement by Mr. Sperry at opening of new mill.



L. P. SPERRY, President,
Scovill Mfg. Co., Waterbury, Conn.

CULMINATING some 150 years of brass making in the Naugatuck Valley, Scovill Manufacturing Co. has put into operation at its Waterbury plant what is probably the world's most modern continuous brass strip mill.

This new mill, which establishes a number of new landmarks in brass processing technology, processes the heaviest cold rolled nonwelded brass coils in commercial use in the brass industry. Built at a cost of more than $10 million, operations of the mill are geared to take full advantage of the operating characteristics of a flat metal continuous casting unit which turns out slabs of consistently uniform structure and analysis weighing in excess of 2000 lb per slab. This is the only flat metal continuous casting machine operating in the brass industry today.

Development of the mill is the result of an effort to achieve a three-point goal—to improve the competitive position of the company; to produce a better product, and to improve working conditions.

Stone & Webster Engineering Corp. was

Scovill's Brass Mill

Continued

given the task of laying out a plant to fulfill these aims, and which would incorporate the most modern engineering ideas and equipment available. The result of this effort is the new Waterbury unit, a mill laid out for straight flow processing with a minimum of manual handling, yet possessing sufficient flexibility to permit adjustment of operations, without sacrifice of efficiency, to the variety of products turned out by the brass industry.

The mill is an integrated operation, containing all the necessary equipment in a single plant for processing cold rolled brass, from the continuously cast slabs to the final packaged finished mill product.

Modern Handling Methods

While the new plant, which was built by Turner Construction Co., incorporates several pieces of equipment not normally found in a brass mill, the aspect of the operation that first catches a visitor's eye is the ideal working conditions and the manner in which modern handling techniques have been engineered into the processing to virtually eliminate all arduous manual labor. This equipment, plus a high degree of automaticity in all processing steps, are playing vital roles in minimizing mechanical damage to stock in process and in permitting application of more exacting quality control to all steps of the operation. Highlights of the mechanical handling equipment found in this plant are described and illustrated on the reverse side of the insert on the facing page.

From the melting of the metal in the biggest furnaces in the brass industry, through the continuous casting operation, the Sundstrand corner miller and into the breakdown mill, the latter being the largest ever built for the brass industry, electrical controls are used intensively on all operations, with full automaticity utilized wherever feasible.

The flow chart on the facing insert illustrates how equipment is arranged and tied together with handling equipment in a manner to give a high degree of flexibility with underlying straight flow processing.

Descriptions and illustrations of the melting furnaces, the continuous slab casting machine, the rolling mills, the annealing furnaces, the slitting lines and the spray pickling units are given in the pages following the insert.

Among the advantages which Scovill engineers prophesy for this new mill is the ability to produce the heaviest continuous nonwelded coils in the brass industry with unusual uniformity of chemical composition, temper and gage. They believe that annealed and cold rolled tempers and grain size can be more closely controlled than ever before. Too, edges of the strip have less camber, and crown is practically eliminated.

Heart of the new mill is Scovill's exclusive continuous flat-metal casting machine. Metal to be cast is melted in three electric induction furnaces, each with a capacity of 10,000 lb per hr. These furnaces are the largest in the brass industry and are equipped for precision control of melting temperatures and other factors which influence the metallurgical qualities of the brass.

At staggered 30-min. intervals, each of the three furnaces discharges into a holding furnace of 9000 lb capacity. This furnace is mounted over the casting machine and provides a continuous flow of molten brass to the machine. The intermixing of the charges from the three furnaces gives additional uniformity of composition to the casting as the metal descends through the water-cooled mold.

The casting machine itself is of giant size and has a capacity of several million pounds a week. It is the only one of its kind in America, designed to produce flat bars for cold-rolling into brass strip and sheet. As the brass emerges from the machine, it is automatically sawed into bars of uniform length, each one weighing in excess of 2000 lb. The conventional operation of shearing or sawing gates from individually cast bars has thus been eliminated, and internally sound metal is assured.

Mill Features Automaticity

Pushbutton control characterizes the heavy equipment, and automaticity is introduced wherever possible. On the cold-rolling mills, for example, spacing between the working rolls is kept constantly uniform by photoelectric controls which compensate for varying temperatures and roll expansion which takes place as rolling progresses. Vacuum cup and roller conveyor handling equipment do away with laborious manual handling usually associated with brass mill work.

Annealing and cleaning equipment incorporates the most modern devices for producing closely controlled annealed tempers and clean, smooth surfaces. The final annealing furnace and cleaning unit are coupled so that as the strip or sheet emerges from the furnace it is automatically positioned and travels at a controlled speed through the cleaning unit.

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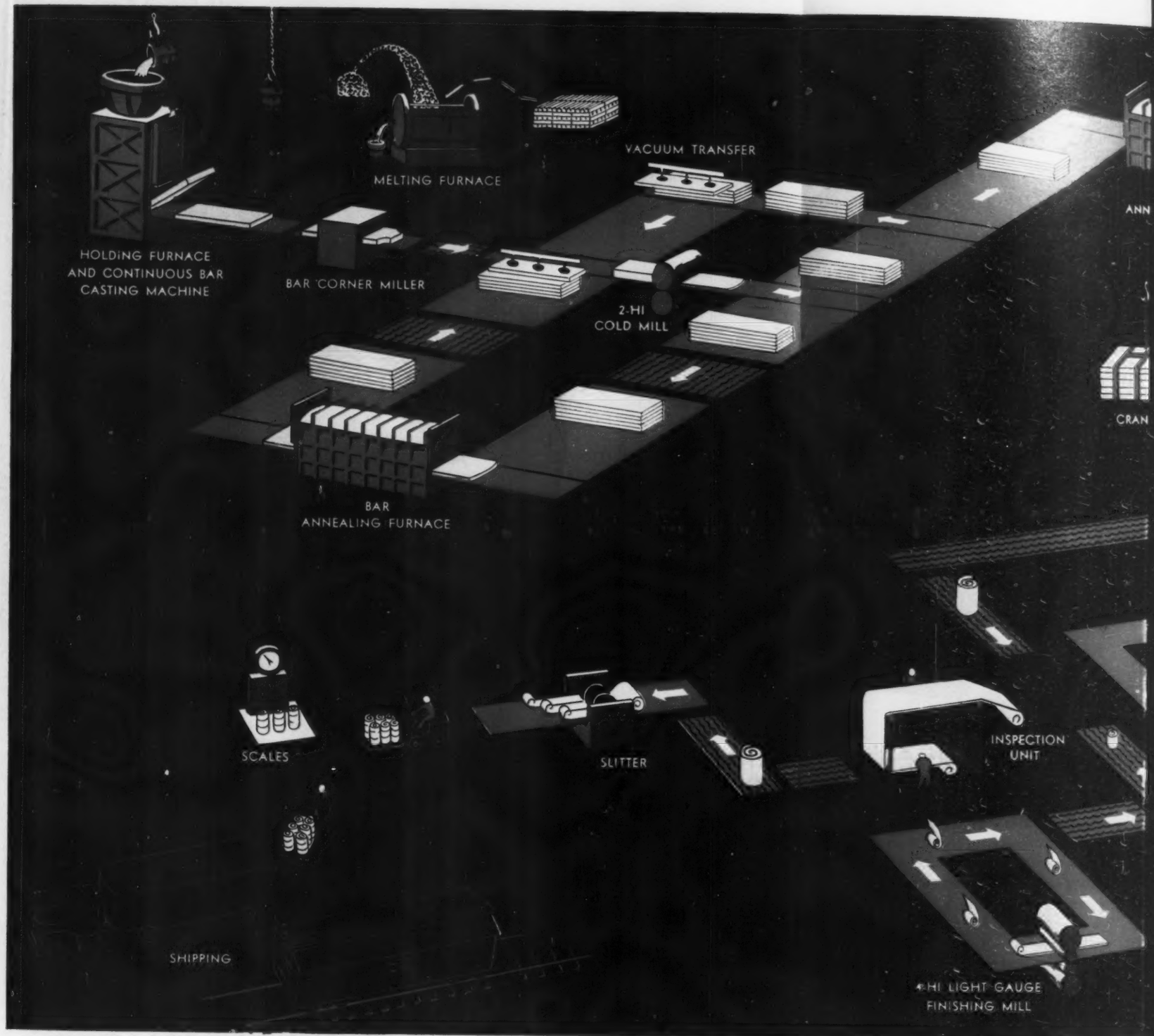

NEW SCOVILL BRASS MILL DESIGNED FOR INTEGRATED, CONTIN

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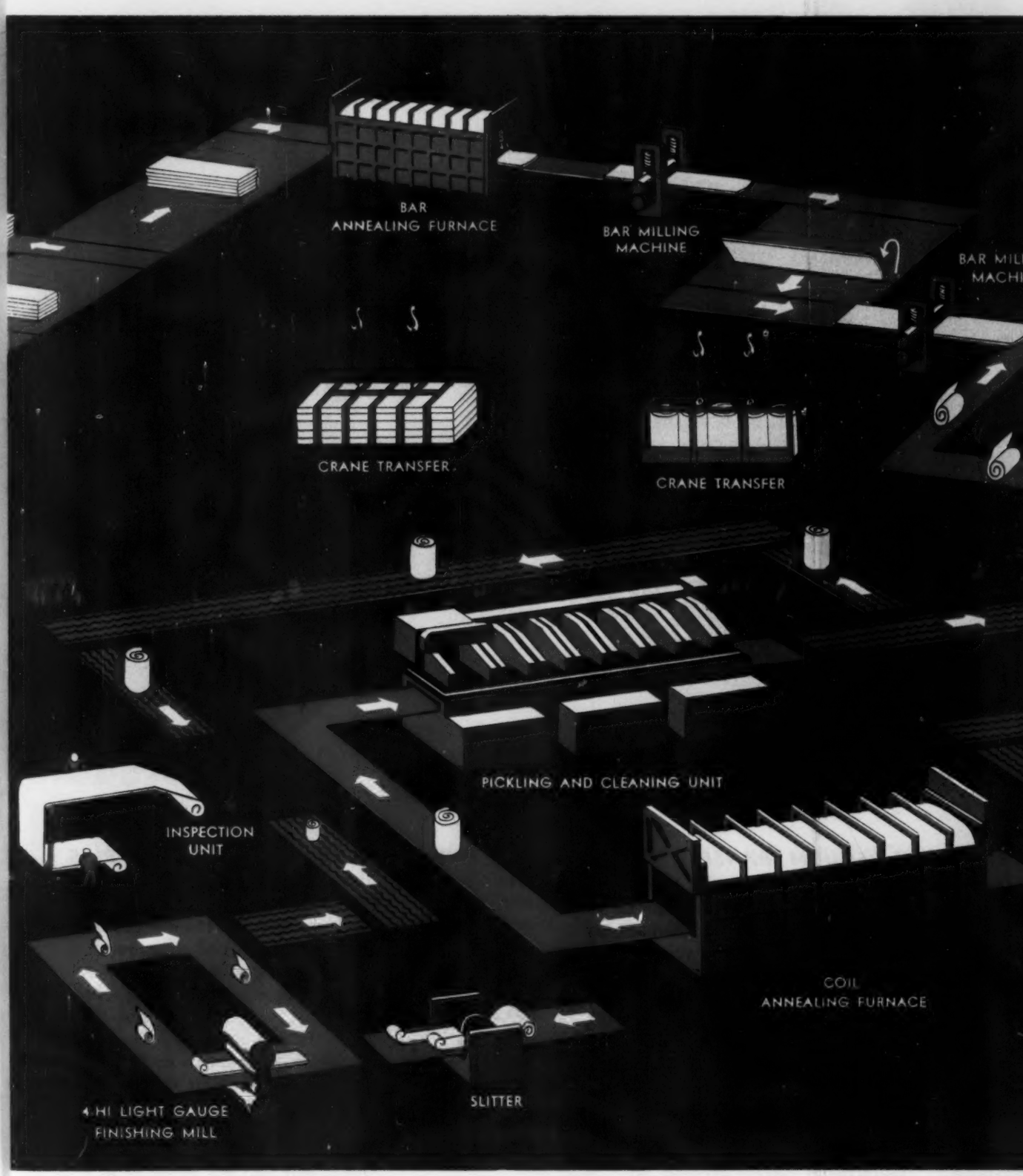

INTEGRATED, CONTINUOUS PROCESSING

The new $10 million plant recently put into operation by Scovill Mfg. Co. at Waterbury, Conn., for the production of cold reduced brass products, is an integrated unit designed to give continuous, straight flow processing from the bar casting unit to the packaging of the finished strip. This flow sheet, prepared by Stone & Webster Engineering Corp., illustrates the sequence of processing steps at this plant and emphasizes

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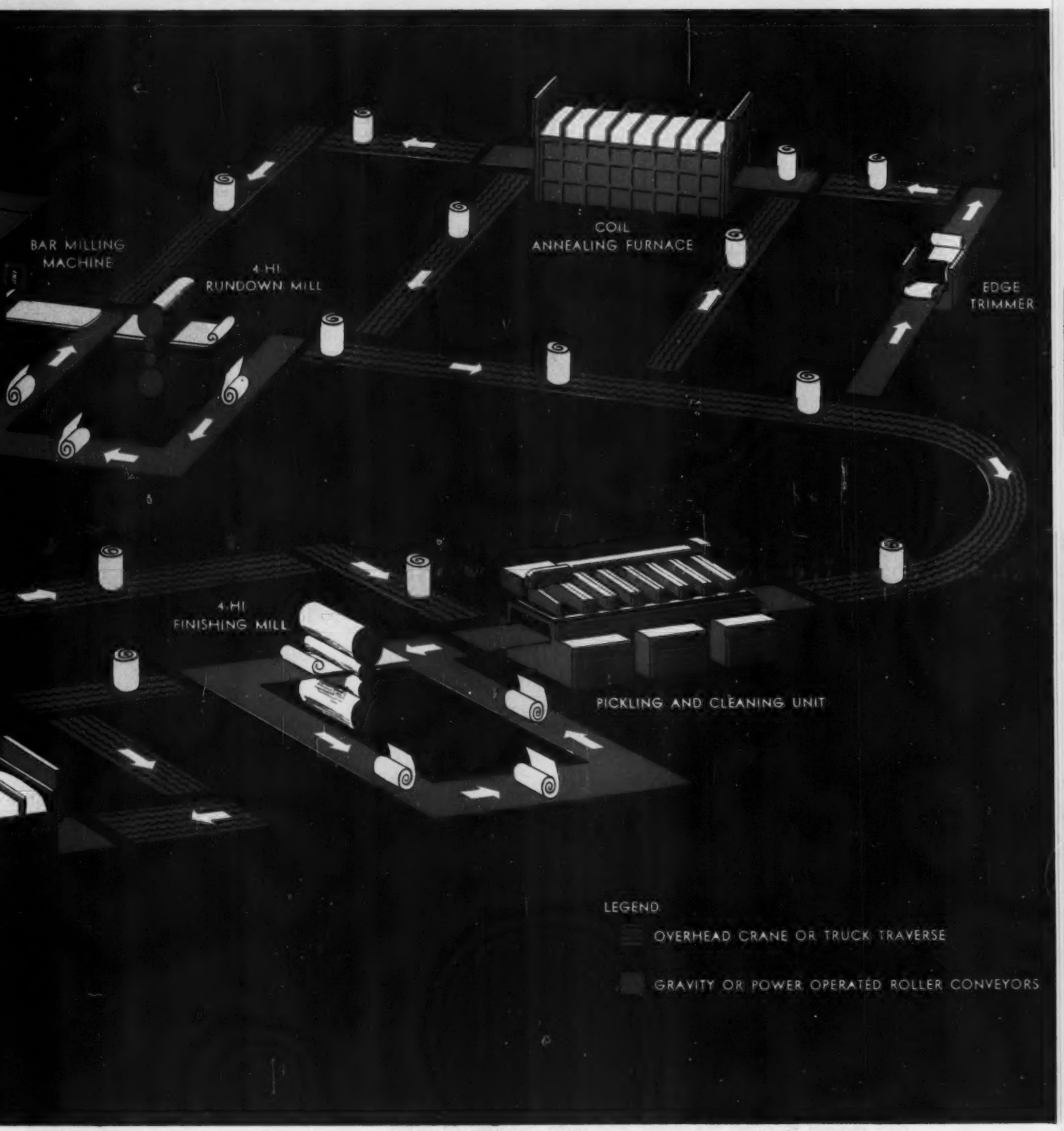

the role of material handling equipment in giving straight flow production while also maintaining flexibility in the size and thickness of products handled. Some typical views of the handling equipment used in this modern plant are shown on the reverse side of this insert. A detailed description of various processing units is given in the accompanying article.

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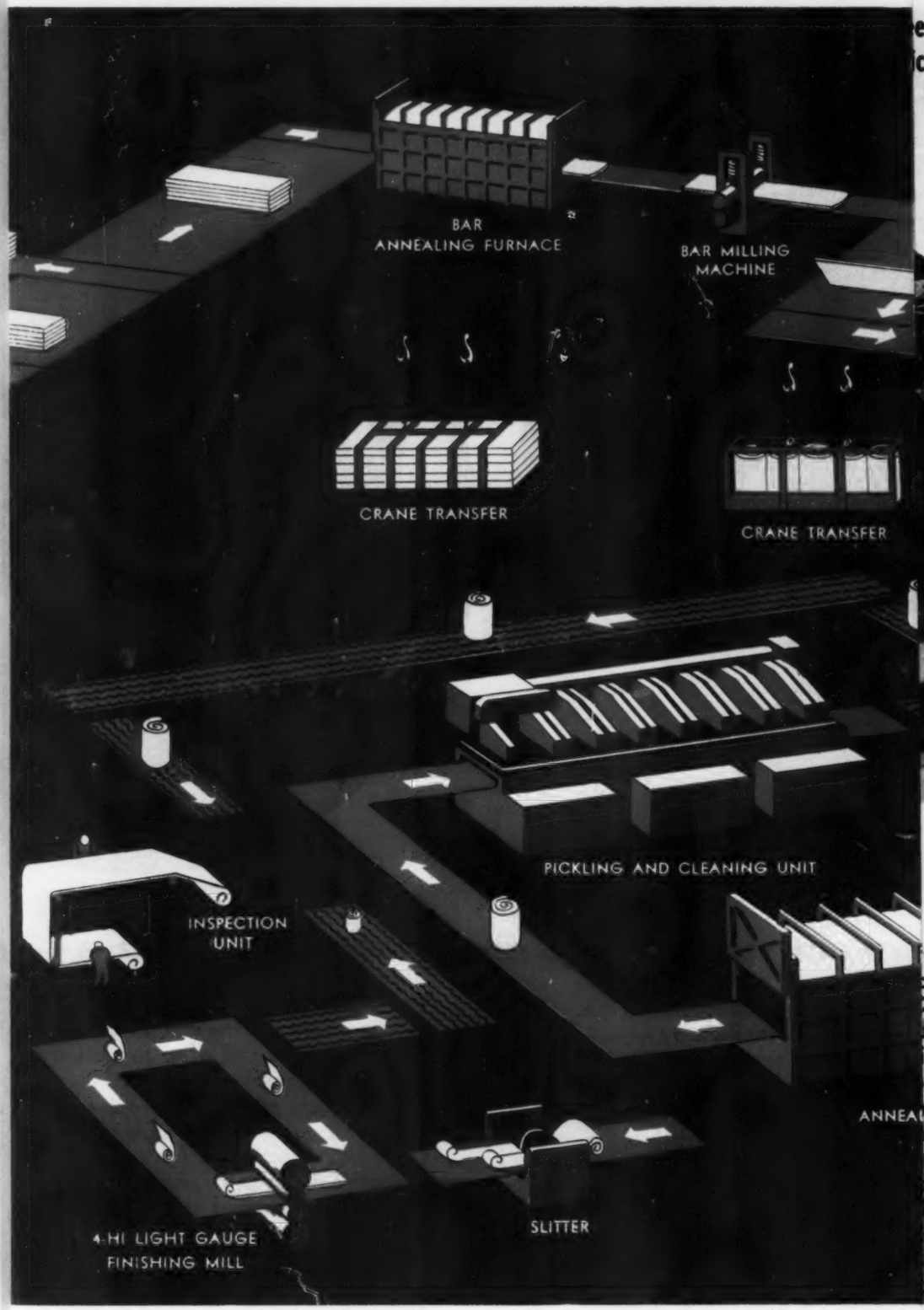

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FLAT BAR CONTINUOUS CASTING

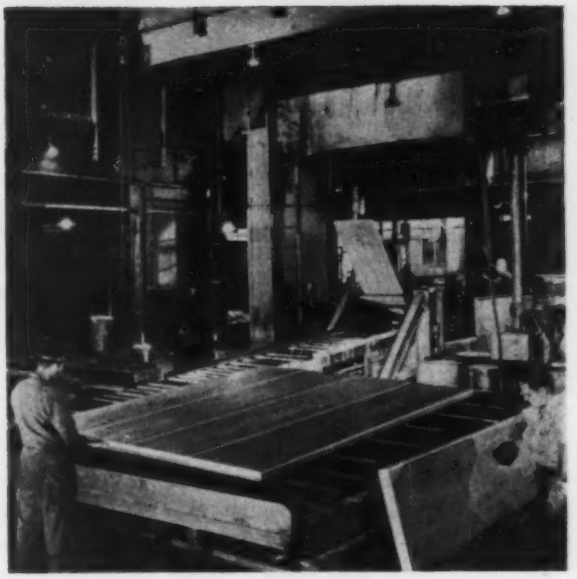
HEART of the new Scovill mill is the flat metal continuous casting machine shown in the accompanying illustrations. This Scovill-modified Rossi-Junghans unit is the only continuous slab casting unit operating in the brass industry. Producing several million pounds a month, this unit feeds slabs weighing in excess of 200 lb each to the rolling mill. Size of slabs vary with the product to be rolled, but an average size is 2½ in. thick, 24 in. wide and 10 ft long. Maximum width that can be cast is 28½ in. Scovill also operates another Rossi unit producing rounds only.

Hot metal for the casting unit comes from the melting furnace via 5000 lb ladles. This is charged into the 9000 lb holding furnace at the head of the casting machine. Temperature is maintained in this latter furnace by a built-in Ajax 120 kw induction unit.

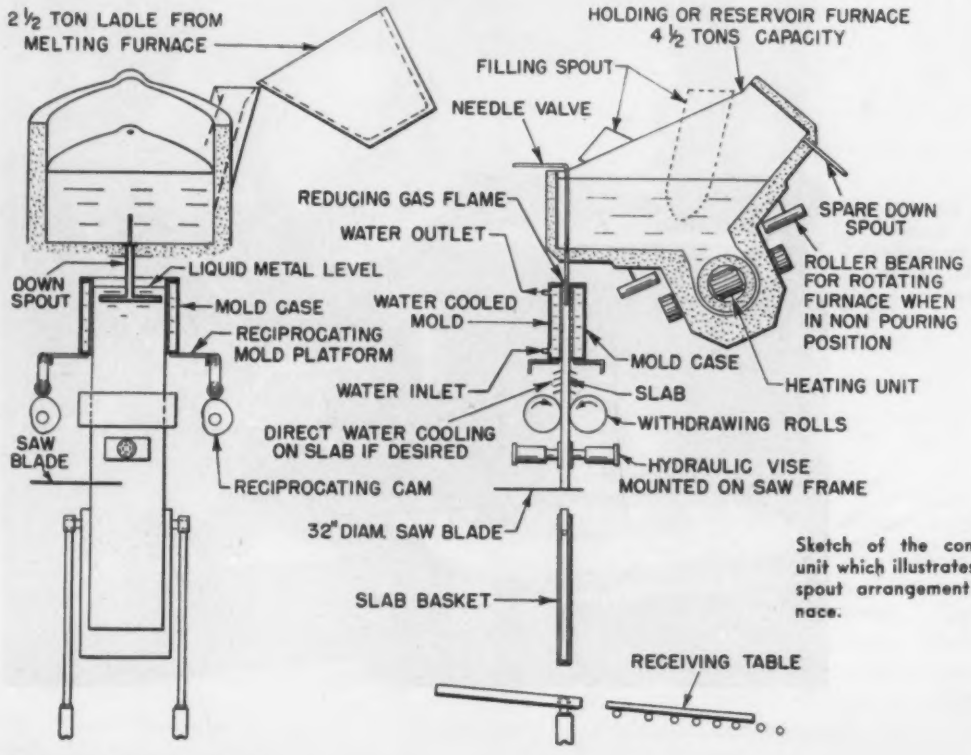
The furnace is equipped with opposed sets of spouts, each set consisting of a pouring down spout, a receiving funnel and an emergency dump spout. The entire furnace is built on a tilting turntable which permits alternating in the use of the spouts for repairs and maintenance.

The mold is of copper construction, water-cooled, and reciprocates up and down, the down-stroke being synchronized with the discharge rate of the bar. The solidified slab is drawn from the mold at a constant speed by a set of withdrawing rolls synchronized with the descent of the mold.

A horizontally mounted saw is hydraulically clamped to the slab during the cutting period, allowing the entire saw assembly to move downward at slab speed. A basket catches the slab after cutting and deposits it on the roller tables visible in the accompanying illustration. Testing and inspection follows, and the slab is then ready for rolling.



View of the bottom, or discharge point, of the continuous casting machine showing the basket about to lay a slab on the roller table for inspection prior to rolling.



Sketch of the continuous slab casting unit which illustrates particularly the twin spout arrangement of the holding furnace.

Continued

MELTING FURNACES

OUTSTANDING among the innovations at the new Scovill mill are the 5-ton per hr induction melting furnaces, shown in the accompanying illustrations, which feed hot metal to the continuous casting machine. These Ajax-Scomet furnaces, of which two are already installed and another under way, are the largest used for melting brass.

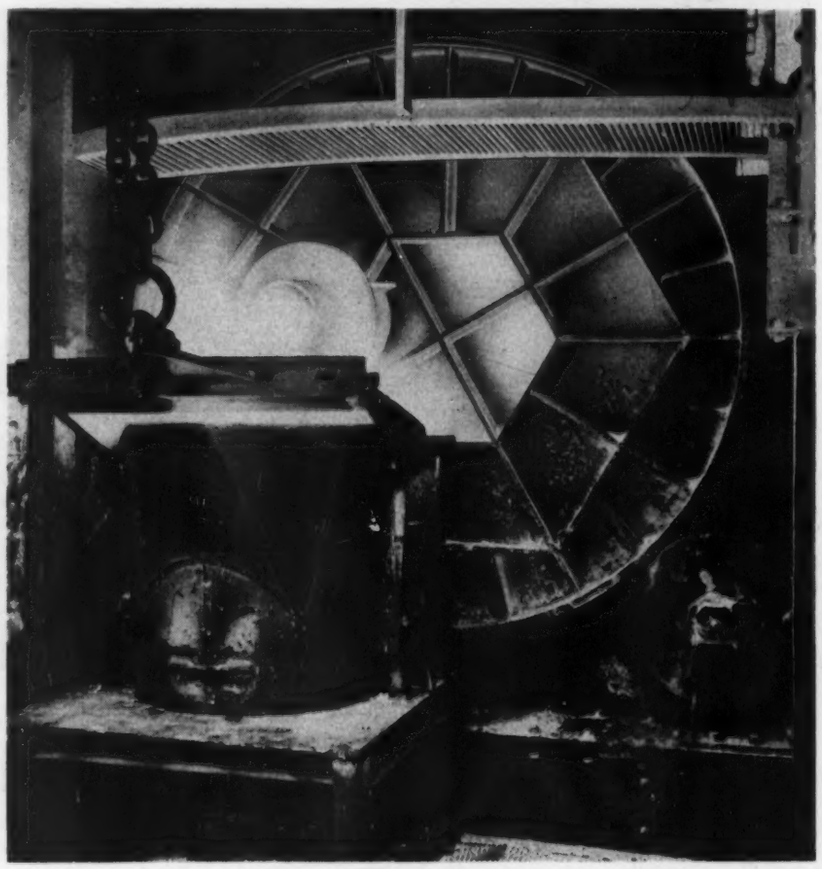
These furnaces, built by Ajax Engineering Corp., under Scomet license, are of the drum type, with a rated capacity of 1000 kw each. Power supply is 575 v, 60 cycle three-phase, with all phases balanced. Each furnace has a melting capacity of about 10,000 lb per hr, presently being discharged in 5000 lb lots at staggered 30-min intervals. Precision control of melting temperatures is automatic, with permanently inserted thermocouples and high-low change of power.

Construction of the furnace, shown in the accompanying sketch, consists of an octagonal steel drum (A) provided with a refractory lining (B) of prefired shapes and standard bricks. Three detachable inductor units (C, D, E), each rated at 333 kw, are attached to the lower side of the drum, generating heat in the melting channels (F, G, H, K). The melting channels form two secondary loops, interlaced with two primary coils (L, M), acting as secondary winding of a short-circuited transformer. The two primary windings surround a closed transformer coil (N).

The inductor units can be readily detached and replaced without interrupting operation of the furnace. This is accomplished by rotating the drum to bring the inductor requiring changing above the molten metal line, thus discharging the inoperative inductor while keeping the metal heated with the two remaining inductors. Each inductor unit has two blowers (O) for cooling the transformer core and primary windings.

A motor-driven speed reducer (P) and two chains (Q) are used for rotating the drum, which turns on the two tires (R) supported by pinions (S). The drum may be rotated in all directions so that either of the three inductors can be emptied for replacement. The rotating mechanism is also used to discharge metal from the drum over the pouring spout (T).

Efficiency of the furnaces, according to pres-



Tapping one of the 5-ton capacity Ajax-Scomet furnaces into a 5000-lb ladle for charging to the continuous casting machine holding furnace.

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ent experience at Scovill, is higher than that obtained with any other type, due to the great amount of power concentrated in a relatively small space. Metal holding capacity of the furnace has been reduced as much as possible to facilitate rapid change of alloys, a considerable factor in brass mill operation.

Molten metal from the furnace is transferred to the Rossi-Junghans continuous casting machine in 5000-lb capacity ladles. When the proposed three furnaces have been installed, they will be capable of supplying about 30,000 lb of metal per hour to the continuous casting machine.

Vibrating Hopper Feed

A particular advantage of this furnace is the ease of operation. Charging is accomplished with a variable speed vibrating hopper, which permits dumping of large amounts of virgin metals and scrap of all kinds into the furnace. This arrangement makes for closer control of uniformity and composition in the metal, and the two furnaces may be operated by only two men.

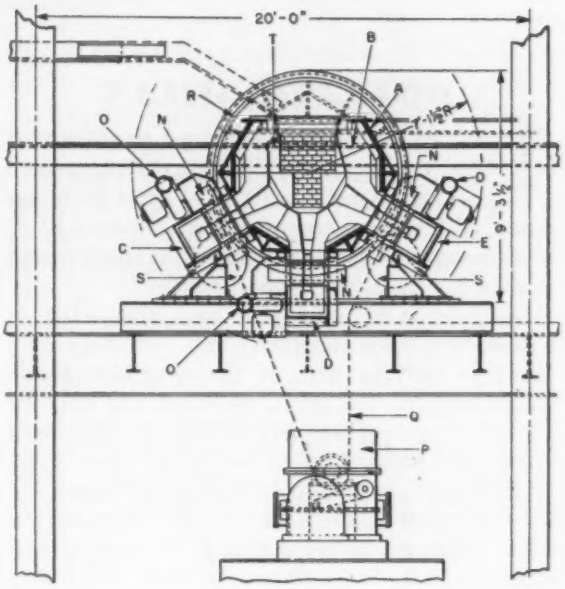
The automatic temperature control not only assures uniformity of temperature, but also eliminates the necessity for manually switching the furnace power on and off. Although the furnace is provided with a high power rate, a change of alloys is not difficult because the furnace can be completely emptied.

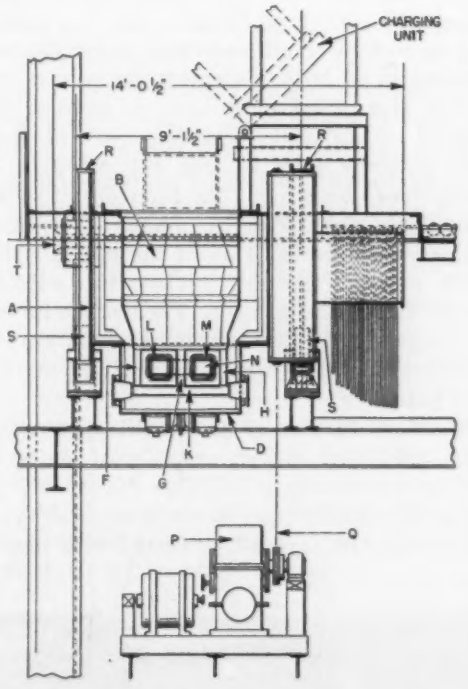
The large amount of metal contained in the drum facilitates fast melting as the cold metal is charged into the furnace through the large opening at the top. Because the melting channels are straight, they can be easily cleaned at regular intervals to prevent clogging of the melting circuit.

Furnace Development

Development of these units goes back to the early days of electric furnaces for melting brass, when Scovill experimented with the Bennett and Hering furnaces. When the Ajax-Wyatt furnaces became available, the company was among the first to install them, and the continuous casting processes of Eldred and Hazelett were investigated at that time. When the Junghans-Rossi process came into being, Scovill was the first to install it in this country. It was soon apparent, however, that the current furnace types were not practical for supplying the large amounts of molten metal required by the continuous casting machines, so development began on new furnace types which would be able to supply the required amount of metal in the fastest, most economical manner.

This work was carried on by Ajax Engineering Corp. and Scomet Engineering Co., a corporation jointly controlled by Scovill and American





General details of the 1000-kw induction melting furnaces. Letter references are given in the text.

Metal Co. Combined efforts of these companies produced the electric induction Ajax-Scomet furnace, adaptable to melting brass, zinc, aluminum and other nonferrous metals. These furnaces of extra-large capacity assure precise control of melting and uniform chemical composition, along with high output of molten metal for the continuous casting process.

ROLLING MILLS

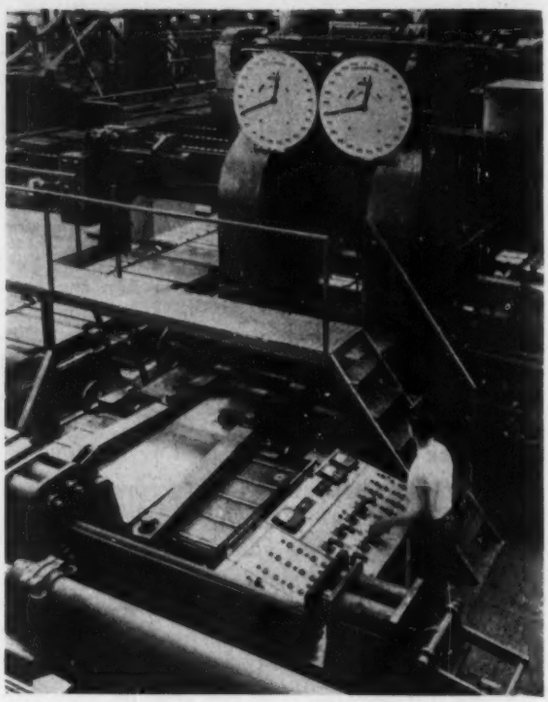
THE rolling mill equipment installed at Scovill has, at its starting end, a cold breakdown mill built by Farrel-Birmingham Co., Inc., and equipped with General Electric controls, which is the largest manufactured to date for the nonferrous industry.

Installation has also just been completed on a four-high cold run-down and four-high cold finishing mill as part of the new continuous strip line. The two mills, designed and built by United Engineering and Foundry Co., with Westinghouse controls, represent the most modern and complete cold rolling equipment as yet designed and placed in operation in the brass industry for producing quality strip and sheet.

The two-high cold breakdown mill is of conventional design, although some new features have been introduced. The frames are cast steel, mounted on cast steel stringer bedplates. The double motor screwdown is equipped with a magnetic clutch which provides for independent operation of either screw or simultaneous adjustment of both. Selsyn units on the entry control desk indicate roll opening in 0.001 in.

The two mill rolls, 30x36 in., are of forged steel, and the journals are supported in precision sleeve bearings. The top roll is hydraulically counterbalanced by means of cylinders located on the under side of the mill housings, which support the roll against the adjusting screws through lifter rods. The system includes a nitrogen-loaded accumulator maintained at predetermined pressure by a positive displacement pump.

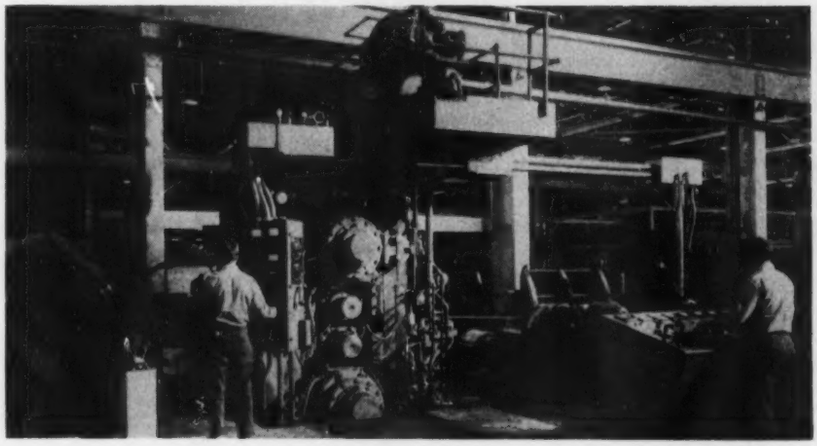
Power is furnished by a mill type wound-rotor induction motor capable of delivering 2000 hp continuously at either 360 or 720 rpm. The mill auxiliaries (screwdown, table, and transfer drives) are all equipped with new GE MD600 dc mill-type motors: five 10 hp, one 25 hp and three 35 hp.



Two-high cold breakdown mill for preliminary rolling operations, which reduces the 1-ton, 2.5 in. thick bars to 0.40 in.

The cold run-down mill is a 16 in. and 34x34 in. mill operating at speeds of from 0 to 400 and 1000 fpm, and is capable of rolling 1-ton bars 29 in. wide and $\frac{3}{8}$ in. thick by 68 ft long down to coils 0.050 in. thick using an upcoiler after the mill. The finishing mill is of the same size and design as the run-down mill, operates at the same speeds and handles the same coils, except in lighter gages, on the upcoiler.

Both four-high mills have 1250 hp driving motors supplied with power from a 1000 kw, 600 v, dc generator to form an adjustable voltage drive system. The 5 hp wiper roll motor, 75 hp blocker motor, and 50 hp upcoiler motor are powered from a separate 75 kw, 230 v, dc generator as part of a variable voltage system.



Four-high cold finishing mill, showing control desk at the right.

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ANNEALING FURNACES

SOME of the world's largest nonferrous continuous gas annealing furnaces are installed in the new Scovill mill. Three of the four furnaces at the plant, one of which is shown in the accompanying photograph, were built by Surface Combustion Corp., and are of the direct-fired roller hearth continuous type. The fourth furnace was built by the Electric Furnace Co.

Two of the furnaces are an assembly of a heat chamber joined to a specially constructed high capacity preheater, cooling chamber and quench tank. The other two furnaces are duplicates, with the exception that they do not incorporate the preheating unit. One furnace can process either coiled sheet or bars while the other is restricted to coils.

The continuous coil furnaces are divided into two main work sections—the heating section and the cooling and quench spray section. The 100-ft heating chamber is further divided into five heat zones for flexibility of heating cycles. This permits the changing of alloys or furnace temperatures by merely leaving an empty zone between different charges.

The 92 burners in each furnace are of the low pressure, automatic proportioning, velocity type, burning propane gas. They are located in the side walls and staggered to fire above and below the work. Automatic heat-demand controls are built in and facilities for removal of burner units without furnace shutdown are also provided.

Thirteen convection fans having 36 in. diam blades and water cooled bearings are situated in the furnace chamber ceiling to assure even distribution of heated gases through the charge, especially during annealing of sheet coils. Each fan is driven by an individual 3 hp motor with separate pushbutton controls.

Adjacent to the discharge end of the furnace are the refractory-lined slow cool chamber and the stainless steel spray quenching chamber. The 6-ft long slow cool unit is directly connected to the 12-ft spray quench section. In the latter, water is sprayed on the work for quickly cooling the bars to permit them to be handled immediately from the discharge table.

Because of the weight requirements encountered in continuous brass annealing, power rollers used in the heating and slow cool chambers have a rated capacity of 2000 lb per roll at 1472°F. Power is obtained from a sprocket and chain arrangement on the outside of the furnace geared through a 3 hp conveyer drive motor and double transmission.

Operates on Gas or Oil

The continuous slab furnace is unusual in that it contains a flame impingement preheating chamber in which the major portion of the heating is done, the long conventional heating chamber being used to equalize and maintain final heating of the bars to the desired annealing temperature. Burners in the preheater can be operated on either propane gas or standby oil through a temperature range up to 1500°F. Power driven alloy conveyer rolls similar to those in the main heating section are used in the 14-ft long preheater.

Overall length of the furnaces is about 117 ft, exclusive of charging and discharge tables. The furnaces are designed for production capacities of 32,500 lb per hr of coiled sheet or 36,700 lb per hr of bars. Coils up to 30 in. OD and weighing 2000 lb are handled in two parallel rows, and slabs 16 or 24 in. wide of the same weight are processed in two or three parallel rows, two high. While the furnace is designed for maximum production at as high as 1500°F, and uniform annealing conditions at temperatures as low as 450°F, in production the bar stock is annealed at about 1450°F and the coiled sheet stock at 1060°F. Temperatures in the furnaces are controlled by a Ray-O-Tube zonal control system which holds temperatures from coil to coil within a range of 10°F.

Coil and bar annealing furnace, designed to process 2000 lb coils of strip brass, two abreast. Flat bars up to 45 ft in length can also be accommodated.

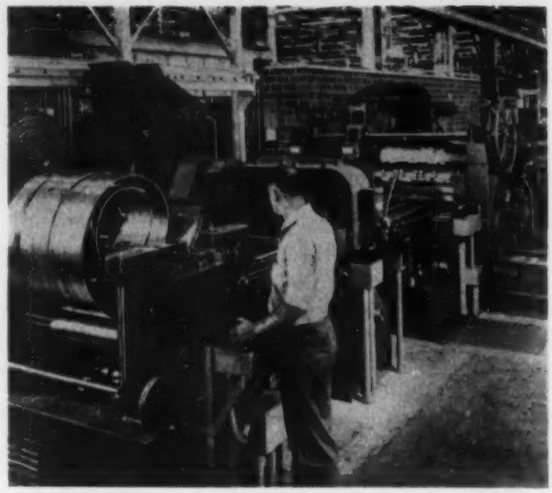
Continued

SLITTING LINES

THE Scovill mill includes three complete slitting lines of, respectively, 1/32, ⅛ and ⅜ in. capacity. These units, built by Waterbury Farrel Foundry & Machine Co., are equipped with Farval centralized lubrication and centralized electrical controls.

Typical of these lines is the heavy duty line, shown in the accompanying photo, for handling ⅜ in. stock, hard or annealed, up to 30 in. wide. The first unit in this line is a coil box powered by a 5 hp gearmotor. Then follows a five-roll straightener equipped with feed rolls and driven by a 40-50 hp motor. It is fitted with a pneumatic metal wiper.

The next unit, the gang slitter, can make five cuts on ⅜ in. brass at 150 fpm and is powered by a 100-125 hp motor. The cutter spindles are equipped with 16 in. diam cutters, sleeve mounted. A rotary scrap cutter, with feed rolls, follows the slitter. It will cut 1½ in. wide scrap into 2-in. lengths which are carried away by a conveyer. The shear is an upcut unit, with the cutter blade having ⅝ in. per ft shear and an upstroke on the slide of 3½ in. The final unit in the line is a three-roll coiler which operates at 100 to 300 fpm. The coiler rolls are 6 in. diam by 34 in. long.



Heavy duty slitting line from the discharge end where ⅜ in. strip is slit. This unit is equipped with an upcut shear.

The medium duty slitting line may be used for either conventional slitting, in which the metal is fed through, or for pull through slitting. It will handle hard or annealed ⅛ in. brass strip. The pay-off unit has a speed range of 100 to 1000 fpm, depending on thickness of metal. Motor speed of the payoff is regulated to give a back tension to the metal as it is unwound from the drum.

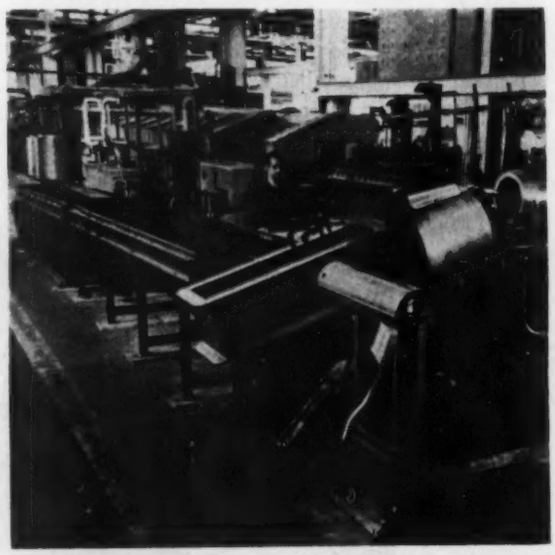
An unusual feature of the light duty line, which handles 0.032 to 0.10 in. stock, is that it is hydraulically driven by Vickers' equipment.

SPRAY PICKLING LINES

PICKLING operations at the new mill are handled by two spray pickling machines built by Metalwash Machinery Corp. capable of handling strip up to 30 in. wide at speeds up to 600 fpm. Each of these lines is more than 150 ft long and consists of a coil pay-off reel; feed rolls and metal flattener; a series of sulfuric acid, bichromate, cold water, hot water and soap tanks, and a hot air dryer. A winding reel for light metal and a coiler for heavier strip is installed at the discharge end of the lines.

Pickling and rinsing is all done by pressure spraying and carryover of liquids from one tank to another is prevented by a series of air pressure plows. Stitching of one coil to another is not done in these lines. When a coil of strip is fed into the line, it will have an uninterrupted run to the end. This technique is expected to result in a uniformly clean surface without overpickling or etching in spots which occurs when strip is stopped for stitching.

These machines are the result of extensive work with an experimental unit which was built to duplicate the conditions which would be found in actual production. Particular emphasis was placed in these studies on controlling carry-over. The production units installed at Scovill handle a greater variety of gages at higher speeds than any unit previously built by Metalwash.



One of the spray strip pickling lines can be seen here, together with supplementary coil handling equipment. This unit is capable of handling strip up to 30 in. wide at speeds up to 600 fpm.

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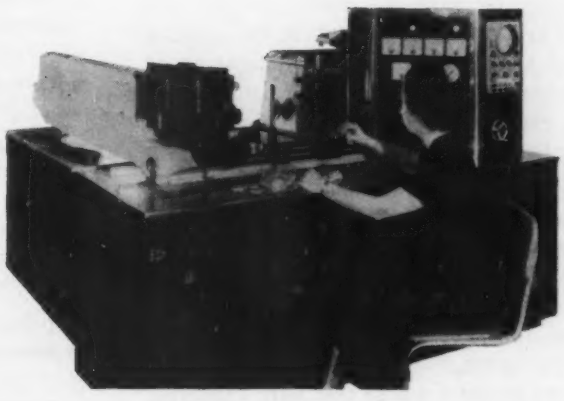
Spectrographic Analysis of Ductile Cast Iron



By J. T. ROZSA
National Spectrographic Laboratories, Inc.
Cleveland

SUMMARY: Improvements in spectrographic analysis techniques adapt the method to rapid, low cost determinations of magnesium and cerium in ductile cast iron. Application of the method for this purpose is described and data are presented indicating accuracy and reproducibility obtainable.

ONE of the results of the current interest in ductile cast iron has been the realization that chemical methods of analysis are inadequate for the alloying elements which promote formation of nodular graphite structures. The formation of nodular graphite during solidification is incurred by small additions of cerium, magnesium, or an alkaline-earth metal in a carrier, such as nickel, copper, or ferrosilicon.

Cerium treatment has been extensively used in England,[1] with a few foundries in the United States experimenting with it, while the alkaline-earth treatment is entirely experimental.

The residual magnesium retained in the cast iron is critical: If too low, some of the graphite will remain as flakes; if too high, excessive carbon compounds are formed in the metal. A similar condition exists for cerium. Satisfactory nodular structures in iron are usually obtained with a residual content of 0.04 to 0.10 pct for magnesium and 0.02 to 0.05 for cerium. While magnesium treatment is considerably less expensive than cerium treatment, the cost is still relatively high and appreciable savings can be obtained through reliable recovery data.

In general, these additive elements comprise a group well outside the conventional experience of the cast iron laboratory, and for which neither

standards nor laboratory techniques are readily available. To obtain the requisite product control, several laboratories have developed chemical methods of analysis, but almost universally have found them either long, or costly, or both.

Colorimetric analysis for magnesium involves the difficult removal of iron and the development of the characteristic red color of the Titan Yellow indicator for transmission observations at 525 millimicrons.[2] The time for analysis is about 5 hr, although batch work will reduce the individual prorated time. Chemical analysis of cerium is a similar colorimetric method;[3] removal of the iron is facilitated by alkaline precipitation and organic extraction of the cerium. If the manganese is high, electrolysis is necessary prior to development of the reddish-brown color for observation colorimetrically. The time of analysis is about 8 hr.

Other laboratories, with more limited development programs, have not been so fortunate, and have been confused by the lack of correlation of obtained chemical data to metallurgical observance of cast iron properties. In one instance, a small foundry using the magnesium treatment, obtained a cast product whose test bars exhibited tensile strengths of 80,000 psi; the chemical analysis for magnesium indicated 0.023 pct and an independent check elicited the result, "present." Subsequent metallographic examination revealed complete nodularization and the spectrographic analysis showed 0.055 pct Mg.

Utilization of the spectrograph as an analytical tool in the metal industry is not new. In fact, one of the first large-scale routine high speed spectrographic laboratory installations in the U. S. was at a Michigan foundry in 1937.[4] As a production control, at that time, the primary emphasis was upon the obtainment of 10-min analyses for silicon, manganese, chromium, nickel and titanium. The installation was so successful from the viewpoint of operational cost and time saved, that hundreds of similar installations are now found in the ferrous and nonferrous industries. The problem of analysis for magnesium and cerium in cast iron was thus investigated spectrographically.

Preliminary Considerations

The final technique as developed, is applicable to all sizes and shapes, since drillings are employed. It permits some four or more determinations in duplicate to be made within an hour at a resultant low cost, and involves no facilities not found in the usual spectrographic laboratory.

The most commonly desired element was magnesium.[5] An examination of the magnesium spectrum revealed no major lines without iron interference. To correct spectrographically for this iron contamination, the maximum dispersion available and the selection of excitation source parameters to suppress coincident weak iron lines was necessary. Arc-like sources were avoided, since the interfering spectral lines were from neutral, or unionized atoms. The line pairings as chosen are given in table I. Appreciable lateral curve shiftings has been found in the equation of an arc to a spark line.

By far, the most common method of sampling molten metal for spectrographic purposes is the chill cast pin of about ¼ in. diam. The pin is obtained by molds or by the glass tube method. Use of the glass tube sampling method is initially difficult and requires a short period of manipulative practice. Once the skill is obtained, the method is very inexpensive and produces a solid, dense pin with very low segregation of elements.

TABLE I

Spectrographic Analysis Operating Conditions

Sample:	1 to 10 dissolved in 1:4 HNO_3. Final volume 50 cc per g. 0.02 ml aliquot placed on each of two machined flat ¼ in. diam aluminum electrodes.		
Spectrograph:	Jarrell-Ash 21 ft grating spectrograph Dispersion 2.5 A per mm Hilger E 492 Quartz Littrow		
Excitation source:	Air interrupted spark source Capacitance Inductance Secondary resistance Impute kva Ampere rf Discharges per half cycle		0.009 mf 0 0 3 12 3
Line pairing:	Element	Wave length	Range, Pct
	Fe II	2898.4	.....
	Mg II	2802.7	0.0011-0.15
	Ce II	4186.6	0.001 -0.10

For cast iron sampled by the pin technique, a minimum sensitivity of 0.009 pct Mg was obtained. While this value is higher than expected, it is still well below the threshold value of effective residual magnesium concentration. An analysis time of 10 min is thus feasible for production work. The major disadvantage is the implied supposition that standards for the pins are available, which is incorrect. Standard samples are prepared by taking part of the pin into acid solution and analyzing chemically or spectrographically as described below.

Another common spectrographic technique which was suggested as having flexibility is the use of carbometer type test samples. These samples are chill cast cylinders of about 1 in. diam, and are obtained quickly by using a cut-off wheel. With 14 amp (RF) from an air-interrupted spark excitation source, the accuracy and sensitivity are enhanced, relative to the pin method. A range of 0.005 to 0.10 pct Mg is readily obtained. Whenever the emphasis is upon magnesium only, and when laboratory control of the sampling is feasi-

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ble, this method is recommended for high speed production control.

The need for a basic approach was further supported by the fact that elements other than magnesium, such as cerium, barium, calcium, silver, etc, are currently being investigated.[1]

Only a solution technique, with subsequent spectrographic analysis, could provide versatile element coverage, low manipulation time, ease of standardization and feasibility for wide variations in excitation in working conditions.

The lack of standards could be overcome by the use of the Pierce approximation method[6] or the similar Seidel function. Briefly, it consists of adding known amounts of magnesium, cerium, or an alkaline-earth metal to an untreated cast iron solution, plotting the resultant spectrographically obtained ratios and approximating the residual content. By judicious selections of additions, the approximation is quite accurate. None of the Bureau of Standards cast irons tested have more than 0.0011 pct Mg and Ce. A set of standards, corrected for initial residual magnesium content, is thus readily available for subsequent regular analysis.

For regular samples, the question of segregation is minimized by taking into acid solution samples as large as 10 g. The question of adsorption or mechanical entrainment of the magnesium by the graphite or silica has been considered. Furthermore, the magnesium is thought to exist as a magnesium sulfide inclusion, which provides a nucleus for the radial growth of the graphite structure into its nodular form. It would appear that to dissolve all of the magnesium, the surrounding graphite would have to be destroyed.

TABLE II

Reproducibility of Spectrographic Analysis Data

Metallographically	Chemically, Pct	Spectrographically, Pct
Nodular graphite	0.073 Mg	0.078 Mg 0.073 0.075 0.076 0.078 0.076

Initially, a large number of samples were taken into solution with nitric acid, the graphite oxidized by perchloric acid additions and the silica removed by hydrofluoric acid. Similar results were obtained, after the preliminary nitric acid digestion, by dry ashing the samples at 840°F overnight. Fusion with Na_2CO_3 of the residue from HNO_3-HCl digestion and re-addition to the solution was also satisfactory. Fortunately, it was found by analyzing separate portions of the same sample that nitric acid digestion alone was sufficient. Confirmation was made by analyzing several carbon-silicon residues after metal solution.

TABLE III

A Typical Correlation of Spectrographic Data v. Metallurgical Characteristics

	Nodular Graphite			Pearlitic Graphite	
C, Pct	3.20	3.30	3.12	3.00	.....
P, Pct	0.15	0.18	0.16	0.30	.....
S, Pct	0.010	0.008	0.012	0.009	.....
Ni, Pct	.....	2.00	2.25	0.10	.....
Mg, Pct (spectrographically)	0.059	0.074	0.080	0.007	0.001 Ce
Tensile strength, Psi	80,300	89,300	87,700	45,300	40,400

Once the sample is dissolved, a drop of solution is placed on the machined flat ends of pure aluminum electrodes. Standards, consisting of digested Bureau of Standards cast iron, to which magnesium additions have been made, are treated likewise, each sample or standard having its own pair of electrodes. Aluminum was chosen instead of carbon because of its lower magnesium content and the absence of erratic absorption characteristics.

The two electrodes representing one solution are then sparked as self electrodes and recorded on SA No. 1 film. The resistance and inductance parameters are kept as low as possible to prevent damping of the oscillaroty spark or enhancement of the arc-like properties. An air-interrupted spark source produces optimum coverage and conveyance of the sample into the arc column at a logarithmic rate. This condition increases the accuracy, suppresses the iron lines, and permits a sensitivity of 0.001 pct Mg to be readily obtained (see table I). While no sample above 0.10 pct Mg has been analyzed, the technique will permit analysis up to 1.00 pct Mg.

For elements with complex line spectra requiring arc excitation, aliquots of the solutions are dried in carbon cup electrodes and burned at 20 amp dc, employing a high disperson spectrograph such as a 21-ft Jarrell-Ash.

An accuracy of about 10 pct is obtained. As an example, a sample analyzed by a large nickel company was re-analyzed repeatedly by the spectrographic technique, using synthetic standards. The results are given in table II.

A typical correlation of spectrographic data v. metallurgical performance is given in table III.

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Copper Paste Simplifies Brazing

on Aer-a-sol Bombs

By Karl Wunsch
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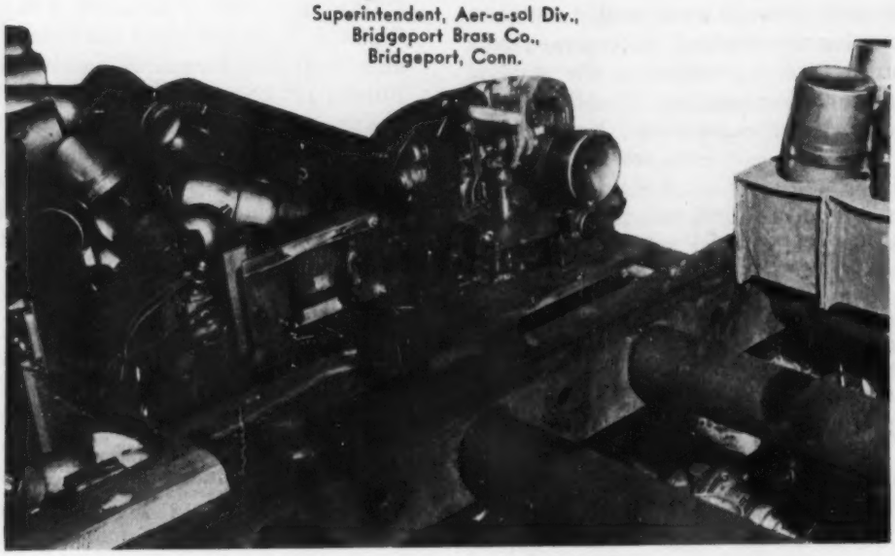

FIG. 1—The copper paste, Cubond 151, is applied by revolving the container on a rotor past the nozzle of an applicator gun. This leaves a ring of paste around the male portion of the assembly about 3/8 in. above the junction with the female section.

COPPER in paste form is being used by Bridgeport Brass Co. for furnace brazing operations in the production of Aer-a-sol products. This paste, which replaces copper wire rings, increases the efficiency of the brazing operation, eliminates the operation of forming the rings, and also eliminates the maintaining of stocks of rings.

The copper paste used by Bridgeport is Cubond No. 151, developed by Metals Refining Co., and is applied by an applicator gun that deposits the paste on the part in the form of a ribbon. Cubond 151 contains 22½ lb of copper per gal as a cuprous oxide suspended in either a synthetic petroleum base or in a base that does not change in viscosity with changes in temperature.

The synthetic petroleum base paste is used at Bridgeport Brass because it readily reverts to hydrocarbon gases and the amount of carbon residue is inconsequential. The copper paste contains a wetting and antispatter agent and also contains fluxes of boric acid.

The brazing operation at Bridgeport Brass consits of joining two steel cups to form an Aer-a-sol bomb. The paste is applied as the assembled sections are revolved by a rotor past the nozzle of an applicator gun, as shown in fig. 1. This leaves a ring of paste around the male portion of the

SUMMARY: Use of a newly developed copper brazing paste for joining the cups of the Aer-a-sol bomb produced by Bridgeport Brass has simplified this brazing job. A description of the operation, and general details of this copper paste and its use are given in this article.

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FIG. 2—The brazing furnace is an electrically heated roller hearth unit, atmospherically controlled. The assembled parts are shown here entering the furnace for brazing.

assembly about ⅜ in. above the junction with the female section. After paste is applied, the bombs are loaded on alloy trays holding 60 bombs in an upright position and are moved by a roller table to the brazing furnace.

The furnace is an electrically heated roller hearth unit consisting of a 6 ft entrance vestibule, a 9 ft heating chamber and a 30 ft water jacketed cooling zone. The chamber is 30 in. wide with a door opening of 13 in. The Nichrome heating elements are located in the arch and on the side walls both above and below the hearth pass line. Gas curtained doors operated with electric eyes, together with speed up charge and discharge tables, insure good atmosphere control. Fig. 2 shows how the assemblies are charged into the furnace.

The atmosphere introduced into the heating and cooling chambers is produced by burning 530 Btu carburetted water gas with a minimum of oxygen. The analysis of the prepared atmosphere is 4 pct carbon dioxide, 15 pct carbon monoxide and 21 pct hydrogen and balance nitrogen, with some traces of moisture.

The brazing temperature is approximately 2060°F, and the exposure in the heating zone is approximately 15 min. The total time to traverse the preheat, furnace and cooling zones is approximately 1¼ hr, and fig. 3 shows the discharge end of the brazing furnace.

In changing over from wire rings to paste, the only change required was the installation of a paste dispenser.

Cubond 151, being an oxide paste, requires that the furnace reducing atmosphere reach its location on the work for liberation of the copper for brazing. This is a slight limitation, since the number of joints brazed where the atmosphere cannot reach them is extremely small. The advantages of extremely fine particle size compensate for this feature.

This paste requires no thinning, if operated in specially designed gun applicator units at temperatures between 75° and 100°F. This is a normal temperature near the furnace for most plants. If plant temperature is lower, thinning is possible with kerosene, distillates, fuel oil, or other light petroleum fractions.

Cubond contains no chemicals that will corrode work or furnace parts, and it can be left on parts for several days and will not flake off. The wetting agent in Cubond assures adherence to the steel even though it is oily.

FIG. 3—Brazing temperature is about 2060° F, and exposure time is approximately 15 min. Total furnace traverse time is about 1¼ hr. Parts shown here are being discharged from the furnace.

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Strip Slitter Installed by Tinnerman

Cuts Inventory 60%

By W. A. Lloyd

Cleveland Regional Editor,
THE IRON AGE

GREATER flexibility of production and a 60 pct reduction in raw material inventory have been achieved by Tinnerman Products, Inc., Cleveland, producers of Speed Nut fasteners, as a result of the installation of a strip slitting machine.

Faced with the problem of coordinating raw material inventory with the production of 1½ billion Speed Nut fasteners annually, Tinnerman engineers made an analysis of slit strip requirements. This study revealed that a basic inventory of wide width strip in 13 thicknesses would take care of all needs if the strip could be slit to the required widths at the dictates of production.

Accordingly, a Yoder strip slitter was modified by the Tinnerman machine design department and was installed about 1½ years ago. With this machine, Tinnerman is able to achieve what would appear to be a paradox of mass production: Substantially higher production on a greatly reduced raw material inventory.

At one time, Tinnerman carried 1,500,000 lb inventory of 700 sizes of strip steel in coils slit to standard widths. The company now carries 500,000 lb of wide strip in 13 basic thicknesses and can slit to any of the former 700 sizes from these 13 basic thicknesses.

The strip slitter is composed of six major units: Two payoff reels, the slitting unit, a rotary scrap chopper, a re-wind reel, an unloading dolly, and a control panel. Supplementary equipment includes a conveyer that carries coils of slit stock to the strapping, weighing and inspection bench, and a gravity-operated coil separator return. Arrangement of this equipment is shown in fig. 1, while an overall view of the line is given in fig. 2.

The payoff reels, located at the front end of the machine, are loaded by a two-ton overhead crane. While one coil is running, or feeding, into the slitting unit, the other is being loaded. A safety guard separates the two reels, protecting the operator from the end of the coil as it leaves the arbor. The payoff reels are equipped

SUMMARY: How installation of a Yoder strip slitter by Tinnerman Products permitted a reduction in inventory from 1,500,000 lb of 700 sizes of strip to 500,000 lb of 13 basic sizes is described. The author discusses the construction and operation of the slitter and describes the auxiliary equipment, including an automatic scrap handling unit.

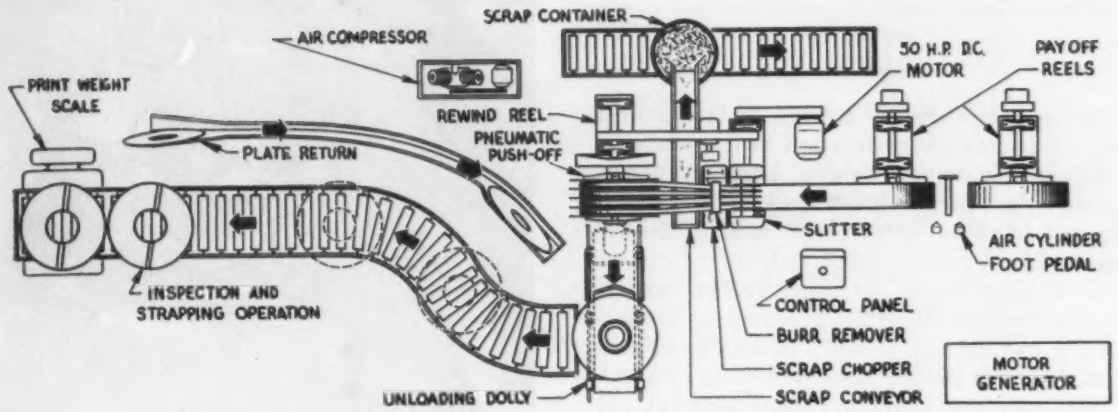

FIG. 1—Arrangement of slitter and auxiliary equipment at Tinnerman Products.

with air-operated arbors, that can be regulated instantly to fit the various IDs of the coils.

From the payoff reels, strip feeds into the slitting unit over roller guides and through wooden fingers (see fig. 3) into the slitting knives, on which there is a micrometer adjustment for setting cutting depth. Passing through the knives the strips emerge through wooden fingers into the guide rolls. Scrap strip follows through scrap guides into a rotary scrap chopper by means of a chute fastened to the slitter. The scrap is carried away on a conveyer belt and dropped into drums. These drums are also moved on a conveyer.

The strip then feeds into the re-wind arbor, with individual strips separated by hardened steel plates 40 in. diam. When the strip is completely rewound, the arbors on the re-wind reels collapse by a cam action, and an air-operated cylinder pushes the coil off the arbor onto a dolly, as shown in fig. 4.

When a dolly is in position to receive the stock, the arbor on the dolly lines up with the arbor on the re-wind reel. Stock is transferred in a vertical position. An air cylinder forces the dolly back, and as it retracts, the stock is tilted into a horizontal position by a cam action track. When the stock reaches a fully horizontal position, the arbor retracts, with the load lying on top of the dolly. The load is shoved off on a conveyer by the operator.

FIG. 2—Overall view of slitting line. Scrap conveyer is visible between reel and slitter.

Strip Slitter

Continued

The load then travels down a 40-ft conveyer to the strapping and inspection bench, where it is inspected, strapped, weighed and tagged, and stacked on skids. Hardened steel separators are returned from the inspection bench to the rewind coil by a gravity track.

The strip slitter is chain driven throughout, and powered by a 50-hp Reliance motor. Tinnerman has cut strip up to 0.070 in. and as thin as 0.010. The thinner the stock, the more cuts can be taken. Normal operating speed is 500 to 700 fpm. While the machine has been in use for 1½ years, the original knives, which are high speed steel and keyed to the slitting arbor, are still being used. They are ground about every six weeks. Normal setup time for the machine is about 20 min. Bench setups can be made, so the machine is not tied up on changeover for more than a few minutes. This is accomplished through the use of sleeve arbors that are slipped onto the solid arbor. The machine will slit strip up to 9 in wide and as narrow as ¼ in. Maximum slitting speed is 1200 fpm.

The payoff reels are mounted on Link Belt bearings with a 5-in. diam shaft, 4½ ft long. The unit is equipped with foot-pedal control for actuating the air arbors.

The slitting arbor is 18 in. long, as Tinnerman originally planned to slit 12-in. strip. The arbor is now equipped with 3-in. collars, and has a maximium slitting width of 9 in. The bulk of the strip bought by Tinnerman is in 6-in. widths, which is slit to popular widths between ½ in. and ¾ in.

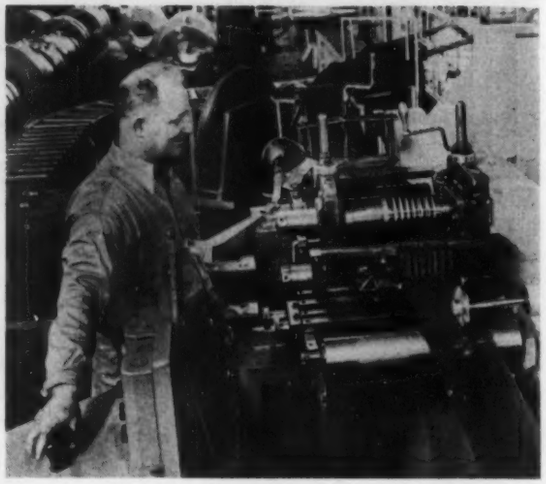

FIG. 3—Closeup of slitting operation, showing knives and wooden fingers.

The machine will make as many as 21 cuts in strip 9 in. wide. There is a choice of drive slitting or pull slitting.

The machine requires a minimum of maintenance. During the first few months of operation it was necessary to regrind the knives on the scrap chopper rather frequently, but carbide chopper knives, which were recently installed, have solved this problem.

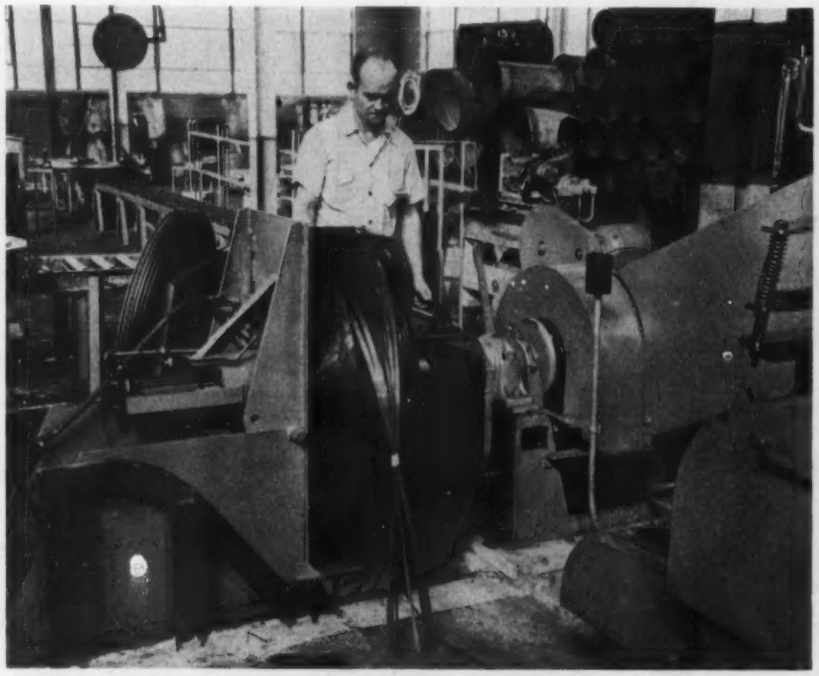

FIG. 4—Slit coil being pushed by an air-operated cylinder off rewind arbor onto the dolly arbor.

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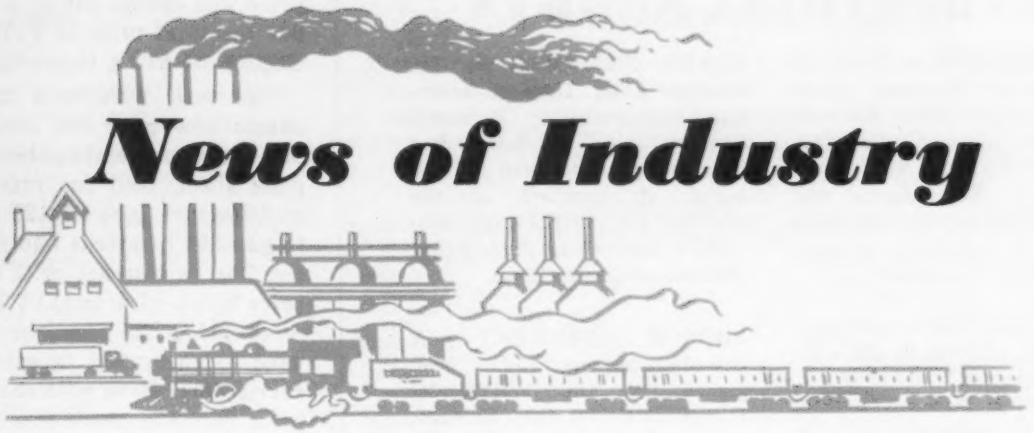


News of Industry

Steel Extras Revised on Cost Basis

Base price advance plus extra revisions average $4 a ton but change is not across-the-board . . . Some wide sheet prices are cut $10 a ton.—*By GEORGE F. SULLIVAN*

New York—The major revision in extra charges, averaging $2 a ton, put into effect Dec. 16 by U. S. Steel Corp. is a move designed to price its products on the basis of manufacturing costs. The revisions are major because they are based on current production methods instead of being adaptations of old fashioned manufacturing processes. Together with base price increases averaging $2 a ton they are intended to offset higher steelmaking costs.

Higher Costs Cited

Some of these higher costs are already here; Coal, freight, ore, alloys, etc., which in the aggregate more than offset the decline in scrap prices since the last general steel price increases in July 1948. Others are coming next year from pension and insurance which will probably average $4 per ton of steel.

The estimate of a $2 increase in extra charges is based on the present shipment pattern. But buyers will immediately look over specifications to see where they can revise them to reduce total extra charges. This will mean a minor revolution in buying practice for some companies.

Until now, sheet and strip extras have been based on hand mill practice. It used to cost more to make a wide sheet because it was harder and slower to handle and crews were paid more to make them on hand mills. This is no longer true on modern continuous mills.

Sheets Priced Realistically

Hot-rolled strip, which on a tonnage and dollar basis took one of the biggest increases in extras (an average of $8.50 a ton) is going to be one of the first places where extra charges are whittled down. Customers will order wider strip or sheets and slit to the desired size, it will depend on their costs and equipment.

These cold-rolled examples show how the customer is generally going to pay more for narrower sheets and less for wide sheets. On a 22-gage automobile body sheet 60x120-in. the old base was $4.00 per 100 lb and the extras added up to $1.20 for a total of $5.20. Today, with a $4.10 base

Average Increases Per Ton

U. S. Steel Corp.	Base Price	Extras
Forging billets, blooms, & slabs	$2.00	$1.00
Rerolling billets, blooms, & slabs	1.00	0.50
Ingots, forging	none	1.00
Skelp	down 2.00	5.00
HR bars	2.00	3.50
Structural shapes	3.00	1.50
Plates	2.00	2.00
Rails	4.00	0.50
CR sheets	2.00	4.00
HR sheets	2.00	4.00
Galvanized sheets	none	6.00
Electrical sheets	25.00 avg.	4.50
Long ternes	none	15.00
Tinplate	down 3.30	...
HR strip	none	8.50
Vitrenamel sheets	none	4.50
Concrete bars	2.00	1.50
Axles	...	2.00
Wire	7.00	0.50
Pipe & tube	5.00 to 8.00	negl.
Wire rods	9.00	negl.

National Tube Price Increases

Pittsburgh—National Tube Co. announced the following increases in its mill prices, effective Dec. 16, within the range of sizes, grades, etc., produced at its plants:

	Increase per ton
Buttweld standard and line pipe, ½ to 3 in.	$5.00
Seamless standard and line pipe	5.00
Seamless casing, all grades	5.00
Seamless oil well tubing and drill pipe, all grades	8.00

Seamless carbon and alloy mechanical and pressure tubing—Prices will be adjusted proportionately.

UNIVERSITY OF MICHIGAN LIBRARIES

INDUSTRIAL SHORTS

NEW BUSINESS — Daniel Klockner, Jr., formerly president of Essex Steel Erectors Inc., has formed DANIEL KLOCKNER JR. INC., Rockaway, N. J. The company will engage in the erection of structural steel buildings, bridges, and industral equipment.

PLANT ADDITION—Construction of an addition to the Chicago plant of JOSEPH T. RYERSON & SON, INC., steel distributers, has been completed. The new building provides approximately 118,000 sq ft of modern plant and office space.

TAKES OVER—It has been announced by the AMERICAN CAN CO., New York, that two of its manufacturing plants at Toledo and Atlanta have been sold to the J&L Steel Barrel Co., St. Louis, wholly-owned subsidiary of Jones & Laughlin Steel Corp., Pittsburgh. J&L will assume the galvanized ware and heavy steel container business of American Can.

DONATES GENEROUSLY — An award program has been set up by the AMERICAN DIE CASTING INSTITUTE made possible by a special fund donated by the Doehler-Jarvis Corp., New York. The program calls for a cash award of at least $500 and an appropriate plaque, to be presented each year to an individual or to a related group of individuals making the most noteworthy contribution to the industry.

EDISON MEDAL—Dr. Karl B. McEachron, manager of engineering, transformer and allied product divisions, General Electric Co., Pittsfield, has been awarded the 1949 Edison Medal by the AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.

EXPANDS LINE — Carpenters hammers and machinist's hammers and hatchets have been added to the line of MANN EDGE TOOL CO., Lewistown, Pa., manufacturers of high-grade axes.

BOARD CHAIRMAN — Dr. Charles Allen Thomas, executive vice-president, Monsanto Chemical Co., St. Louis, has been elected chairman of the board of directors of the AMERICAN CHEMICAL SOCIETY, succeeding Prof. Roger Adams, who is retiring.

FRENCH AGREEMENT — A licensing agreement has been signed by the WHEELCO INSTRUMENTS CO., Chicago, with La Pyrometrie Industrielle, Paris, France, who will manufacture the Wheelco electronic controller. Their subsidiary Le Controle de Chauffe, Bagneux, will manufacture the combustion safeguard.

AMERICAN SUBSIDIARY — The Marshall Richards Machine Co., Inc., Trenton, N. J., has been formed by the MARSHALL RICHARDS MACHINE CO. LTD., Crook, County, Durham, England, manufacturer of wire and tube drawing machinery. The American subsidiary will sell, engineer and service its products in the United States and Canada.

WASHINGTON BRANCH — A new branch office in Washington has been opened by GUY B. PANERO, ENGINEERS, New York. Walter L. Rubel, a principal associate in the firm, will be in charge of the office which will offer a complete mechanical engineering service.

REPRESENTATIVE — A new sales office has been opened by WALKER DAVIS at 644 E. Maple Road, Indianapolis, representing the Blair Strip Steel Co., New Castle, Pa., manufacturers of strip steel, and Lapham-Hickey Co., Chicago, warehouse steel products.

HEADS ASRE—John G. Bergdoll, Jr., vice-president and works manager, York Corp., New York, has been elected president of the AMERICAN SOCIETY OF REFRIGERATING ENGINEERS.

price and extras cut to a total of 60¢ the total price is $4.70—a reduction of $10 a ton.

The man who buys narrower sheets now pays the higher cost per ton of processing them. A 20-gage sheet used for refrigerator manufacture, size 22x120 in. used to pay 35¢ in extras and now will pay 70¢, an increase, with the base price boost, of a total of $9 a ton. A 44x144-in. 22-gage sheet which used to carry 75¢ in extras now carries 40¢. Even with the $2 base price increase, there is a $5 a ton price reduction.

Prices Based on Costs

From overall inspection of the new extra schedules it appears that all products are now priced to carry their own weight. To the customer who has had difficulty in getting certain sizes or products because they were not attractive from a profit standpoint this is good news.

On base prices the biggest increase came in electrical sheets, which were advanced by $20 to $26.50 a ton, the bulk of the tonnage carrying the latter advance. Many electrical sheet manufacturers have long insisted they could not afford to make electrical sheets at Carnegie-Illinois' price.

Some base prices were unchanged, notably vitrenamel sheets, forging ingots and long ternes. Pipe skelp was reduced by $2 a ton on the base.

Alloy extra revisions were negligible. Stainless bases and extras were unchanged.

Geneva Steel Co. Prices

Geneva, Utah — The following are price changes and old prices of Geneva Steel Co., in cents per lb, for sizes and grades made at Geneva:

CARBON STEEL:	Old	New	Increase per ton
Plates	3.40	3.50	$2
Std. struct. shapes	3.25	3.40	3
HIGH STRENGTH STEEL PLATES:			
Cor-ten	5.20	5.35	3
Man-ten	4.45	4.55	2
Abrasion resisting	....	4.65	..

T. C. & I. Prices

Birmingham — The following changes were announced by Tennessee Coal, Iron & R. R. Co.:

	Cents per pound unless otherwise denoted. Old	New	Increase per ton
CARBON STEEL:			
Forging billets, blooms, and slabs, net ton..	$61	$63	..
Rerolling billets, blooms, and slabs, net ton	$52	$53	..
Wire rods	3.40	3.85	9
Hot-rolled sheets, (18 ga. and heavier)	3.25	3.35	2
Cold-reduced sheets.	4.00	4.10	2
Corrugated galvanized culvert sheets, (16 ga., 24" to 30" wide)			
Copper bearing	5.00	5.20	4
Pure iron	....	5.45	..
Copper bearing pure iron	....	5.45	..
Bars and small shapes	3.35	3.45	2
Reinforcing bars	3.35	3.45	2
Plates, carbon	3.40	3.50	2
Std. struct. shapes...	3.25	3.40	3
Std. rails	3.20	3.40	4
Light rails	3.55	3.75	4
Splice bars	4.25	4.40	3
Tie plates	4.05	4.20	3
Axles	5.20	5.25	1
WIRE PRODUCTS:			
Bright low carbon wire	4.15	4.50	7
Nails and staples	Col. 103	Col. 106	3
Merchant wire:			
Annealed	4.80	5.15	7
Galvanized	5.25	5.60	7
Barbed wire	Col. 123	Col. 126	3
Woven fence	Col. 109	Col. 116	7
Bale ties	Col. 106	Col. 113	7
COR-TEN:			
Hot-rolled sheets	4.95	5.05	2
Bars and small shapes	5.10	5.20	..
Plates	5.20	5.35	..
Std. struct. shapes ...	4.95	5.15	..

A new price of $2.60 per bundle on cotton ties will apply on carload lots and will become effective Jan. 1, 1950.

The company announced tin mill products prices 10¢ per base box higher than those of Carnegie-Illinois Steel Corp.

Electrical Sheet Prices

Pittsburgh—Following are new base prices of silicon sheets announced Dec. 16 by Carnegie-Illinois Steel Corp. Base gage has been changed from 24 to 22. Prices are in cents per lb:

Grade	Cut Lengths	Coils
(Hot-Rolled and Cold-Reduced)		
Armature	6.45	6.95
Electrical	6.95	7.45
Motor	7.95	8.45
Dynamo	8.75	9.25
Transformer 72	9.30	9.80
Transformer 65	9.85	10.35
Transformer 58	10.55	11.05
Transformer 52	11.35	11.85
Grain Oriented Grades		
	Coils and Cut Lengths	
Transformer 100	12.35	
Transformer 90	13.60	
Transformer 80	14.85	

Carnegie-Illinois Steel Corp. Prices

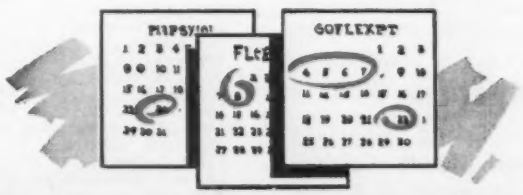
Pittsburgh—The following are f.o.b. mill prices of Carnegie-Illinois Steel Corp., effective Dec. 16. They apply only to sizes and shapes, etc., made at each mill. The former price is shown along with the revision and the change per net ton. (Prices are in cents per lb unless otherwise noted):

	Old	New	Increase per ton
CARBON STEEL:			
Blooms, billets, slabs—forging quality	$61nt	$63nt	$2
Blooms, billets, slabs—rerolling quality	$52nt	$53nt	1
Skelp	3.25	3.15	2
Bars and small shapes	3.35	3.45	2
Concrete reinf bars (new billet)	3.35	3.45	2
Standard structural shapes	3.25	3.40	3
CB's (Including CBL, CBJ and CB sections)	3.25	3.40	3
Bearing piles (CBP sections)	3.25	3.40	3
Sheet piling	4.05	4.20	3
Plates	3.40	3.50	2
Axles	5.20	5.25	1
Standard tee rails —No. 1 O.H.....	3.20	3.40	4
Standard tee rails —No. 2 O.H.....	3.10	3.10	4
Standard tee rails —All No. 2 O.H....	3.15	3.35	4
Light rails	3.55	3.75	4
Tie plates	4.05	4.20	3
Joint bars for standard rails	4.25	4.10	3
Hot-rolled sheets, (18 Ga. and heavier)	3.25	3.35	2
Cold-rolled sheets —commercial quality	4.00	4.10	2
Cor. galv. culvert sheets, (16 Ga.—24 to 30 in. wide)			
Copper bearing ...	5.00	5.20	4
Pure iron	...	5.45	.
Copper bearing pure iron	...	5.45	.
Electrical sheets, (electrical grade)..	5.95	6.95	20

	Old	New	Increase per ton
HIGH STRENGTH STEEL:			
Cor-ten			
Standard structural shapes	4.95	5.15	$4
CB sections	4.95	5.10	4
Plates	5.20	5.35	3
Bars and small shapes	5.10	5.20	2
Hot-rolled sheets...	4.95	5.05	2
Cold-rolled sheets .	6.05	6.20	3
Man-ten			
Standard structural shapes	4.20	4.35	3
CB sections	4.20	4.40	4
Plates	4.45	4.55	2
Bars and small shapes	4.15	4.25	2
Hot-rolled sheets ..	4.10	4.20	2
Abrasion resisting			
Bars and small shapes	4.50	4.60	2
Plates	4.55	4.65	2
Hot-rolled sheets...	4.40	4.50	2
ALLOY STEEL:			
Bars	3.75	3.95	4
Bar shapes	4.00	4.20	4

TIN MILL PRODUCTS: per base box

Effective Jan. 1, 1950	Old	New	Decrease per base box
Electrolytic tinplate, 0.25 lb coating....	$6.45	$6.35	.10¢
0.50 lb	6.70	6.60	.10¢
0.75 lb	7.00	6.85	.15¢
Hot-dipped tinplate, 1.25 lb	7.50	7.30	.20¢
Hot-dipped tinplate, 1.50 lb	7.75	7.50	.25¢
Can-making quality black plate, (55 to 128 lb) inclusive	5.75	5.60	.15¢
Special coated manufacturing ternes .	6.65	6.50	.15¢



Dates to Remember

Jan. 9-13	Society of Automotive Engineers, annual meeting, Detroit.
Jan. 14	American Electroplaters Society, annual meeting, Chicago.
Jan. 15-19	Associated Equipment Distributors, annual meeting, Chicago.
Jan. 16-18	Truck-Trailer Manufacturers Assn., annual convention, Edgewater Park, Miss.
Jan. 20	Malleable Founders' Society, semiannual meeting, Cleveland.
Jan. 22-24	Institute of Scrap Iron & Steel, Inc., annual convention, Washington.
Jan. 23-27	American Society of Heating & Ventilating Engineers, annual meeting, Dallas.
Feb. 12-16	American Institute of Mining & Metallurgical Engineers, annual meeting, New York.
Mar. 21-22	Steel Founders' Society of America, annual meeting, Chicago.
Apr. 3-4	Assn. of Iron & Steel Engineers, spring conference, Birmingham.
Apr. 5-7	Midwest Power Conference, Chicago.
Apr. 10-14	American Society of Tool Engineers, industrial cost-cutting exposition, Philadelphia.

Columbia Steel Co. Prices

San Francisco—The following are price changes for Columbia Steel Co., effective Dec. 16, in cents per lb unless otherwise noted. They apply only to grades produced at its plants:

	Pittsburg		Torrance	
	Old	New	Old	New
Structural shapes	3.85	...	3.85	4.00
Bars	4.05	4.15	4.05	4.15
Reinforcing bars	4.05	4.15	4.05	4.15
Tie plates	4.20	4.35	4.20	4.35
HR sheets, 18 ga. and heavier	3.95	4.05	3.95	4.05
HR drum sheets	3.95	4.05	3.95	4.05
HR annld. sheets, 19 ga. and lighter	...	...	5.05	5.15
Well casing sheets	...	...	4.75	4.85
Corr. galv. culvert shts. (16 ga.—24 to 30" wide):				
Copper bearing	5.75	5.95	5.75	5.95
CR sheets	4.95	5.05	...	...
HR rods	4.05	4.50	...	4.65
Wire, annld. mer. qual.	5.75	6.10	5.75	6.10
Wire, galv. mer. qual..	6.20	6.55	...	...
Wire, bright basic	5.10	5.45	5.10	5.45
Wire, annld. stone	9.40	9.75	...	...
Wire, galv. stone	10.90	11.25	...	...
Wire, M.B. HC spring	6.50	6.85	...	...
Wire, Premier spring.	6.15	6.50	6.15	6.50
Nails, staples, non-stock	6.20	6.30	...	...
	Col.	Col.	Col.	
Nails, staples, stock	123	125	126	...
Barbed and twisted	Col.	Col.		
wire	143	146	...	...
	Col.	Col.		
Woven wire fence	132	139	...	...
	Col.	Col.		
Bale ties single loop	130	137	...	...
Man-ten sheets	...	4.90	...	...

TIN MILL PRODUCTS, per base box:

	Pittsburg		Decrease per base box
	Old	New	
Electrolytic tinplate, 0.25 lb coating	$7.20	$7.10	.10¢
0.50 lb coating	7.45	7.35	.10¢
Electrolytic tinplate, 0.75 lb coating	7.75	7.60	.15¢
Hot dipped tinplate, 1.25 lb coating	8.25	8.05	.20¢
Hot dipped tinplate, 1.50 lb coating	8.50	8.25	.25¢
Canmaking blackplate, (55 to 128 lb)	6.50	6.35	.15¢

National Supply Prices

Pittsburgh — Spang Chalfant Div. of National Supply Co. announced price increases of $5 per ton for all sizes and grades of seamless pipe and oil country casing, and of $8 per ton for oil country tubing and drill pipe, effective Dec. 17.

An increase of $5 a ton was announced for continuous weld ½-in. and larger, and lapweld black and galvanized pipe, all sizes and weights. Extras and deductions in all classes of tubular goods, both welded and seamless, also were increased upwards. There will be no change for the present in seamless pressure and mechanical tubing and coupling stock, both carbon and alloy.

Glad to Testify

Pittsburgh — Replying to Washington demands for an investigation of the Dec. 16 steel price increases, Benjamin F. Fairless, U. S. Steel Corp., president, said his company would welcome the chance to appear. He had already pointed out when the price announcement was made that it averaged about $4 a ton, or about 4 pct, reflecting actual and approaching cost increases.

Commenting on the Washington reports, Mr. Fairless said, "U. S. Steel will welcome such an opportunity to appear and present the facts and figures establishing that its increased costs, including those to result from its new insurance and pension programs, give U. S. Steel no alternative other than to increase its prices to this extent in order to cover such higher costs of operations."

A. S. & W. Co. Prices

Cleveland — American Steel & Wire Co. announced the following new mill prices, effective Dec. 16, within the range of sizes, grades, etc., produced at its plants. Former prices and increase per ton are shown:

	Cents per pound unless otherwise noted		Increase per ton
	Old	New	
Wire rods, carbon			
Donora, Cleveland and Joliet	3.40	3.85	$9
Worcester	...	4.15	..
Cold rolled carbon strip			
Cleveland	4.00	4.15	3
New Haven	4.50	4.65	3
Wire—mfgrs. bright, low carbon			
Cleveland, Donora, Joliet, Duluth, Rankin and Waukegan	4.15	4.50	7
Worcester	4.45	4.80	7
Spring wire—high carbon			
Cleveland, Donora, Duluth and Waukegan	5.20	5.55	7
New Haven, Trenton and Worcester	5.50	5.85	7
Nails and staples			
Donora, Duluth, Joliet, Rankin	Col. 103	Col. 106	3
Worcester	Col. 109	Col. 112	3
Wire—merchant quality			
Annealed			
Cleveland, Donora, Duluth, Joliet and Rankin	4.80	5.15	7
Worcester	5.10	5.45	7
Galvanized			
Cleveland, Donora, Duluth, Joliet and Rankin	5.25	5.60	7
Worcester	5.55	5.90	7
Wire—barbed			
Donora, Duluth, Joliet, Rankin	Col. 123	Col. 126	3
Woven fence			
Donora, Duluth, Joliet, Rankin	Col. 109	Col. 116	7
Bale ties			
Donora, Duluth, Joliet	Col. 106	Col. 113	7

Financing Program Outlined For Lone Star Steel Expansion

Dallas, Tex. — Lone Star Steel Co. on Dec. 13 announced that complete arrangements have been made for the $7 million financing program which will enable Lone Star to carry out its expansion program and provide the company with adequate working capital for the first time since its formation.

An investment banking syndicate headed by Dallas Rupe & Son will underwrite $5 million of the company's 10-year first mortgage bonds. After registration with the SEC and qualification with Texas Securities Dept., 592,185 shares of authorized but unissued common stock will be underwritten and distributed by the underwriting bankers.

In addition to the $5 million provided by the sale of first mortgage bonds, the sale of common stock will provide an additional $2 million. Proceeds from the $7 million in new capital will be used to retire present indebtedness, finance the construction of a cast iron pressure pipe plant and for other corporate purposes.

J. & L. Steel Barrel Co. Making Marketing Changes

Pittsburgh—The J. & L. Steel Barrel Co., wholly-owned subsidiary of Jones & Laughlin Steel Corp., announces purchase of the Fruehauf Trailer Co. plant in Kansas City and sale of its North Kansas City plant, present site of operations.

The barrel firm will combine its present operations with the pail manufacturing facilities in Chicago recently purchased from American Can Co., in the Fruehauf plant. The deal with American Can involved purchase of that company's pail and galvanized ware business, including the Chicago plant and plants in Toledo, Jersey City and Atlanta.

J. & L. Steel Barrel also will consolidate at its Bayonne, N. J., works the Jersey City pail line acquired from American Can.

UNIVERSITY OF MICHIGAN LIBRARIES

U. S. Steel Export Co. Revises Its Price List

New York—U. S. Steel Export Co., U. S. Steel subsidiary, revised its prices on the steel products in the following list.

CARBON STEELS	Per Net Ton
Billets, blooms and slabs:	
Rerolling quality	$61.76
Forging quality	71.76
Tube rounds	84.76
	Per 100 lb
Standard structural shapes	$3.92
C. B. sections and bearing piles	3.92
Steel sheet piling	4.72
Plain plates	4.02
Floor plates	5.07
Hot-rolled bars	3.99
Concrete reinforcing bars	3.99
Fabricated concrete reinforcing bars	4.87
Hot-rolled strip	3.79
Cold-rolled strip	4.71
Tight cooperage hoop	4.14
Skelp	3.69
Axles	5.77
Sheets:	
Electrical, electrical grade, cut lengths—22 gage basis	7.47
Tinplate No. 107	Per Base Box
American coke 1.25 lb coating	$8.13
American coke 1.50 lb coating	8.38
Ferrostan—unassorted 0.25 lb coating	7.08
Ferrostan—unassorted 0.50 lb coating	7.33
Ferrostan—unassorted 0.75 lb coating	7.63
Special coated mfg. ternes—unassorted	7.28
Manufacturing ternes—unassorted	7.83
Black plate can making quality superdraw—unassorted	6.38
Wire Products:	Per 100 lb
Wire rods	$4.29
Bright wire nails	5.99
Bright staples, 9 gage	6.79
Galvanized staples, 9 gage	7.74
Barbed Wire:	80 Rod Spool
Lyman 4 pt. 5 in.	$6.03
Glidden 2 pt. 4 in.	5.53
	Per 100 lb
Glidden 4 pt. 3 in. or 6 in.	$7.03
Iowa 4 pt. 3 in. or 6 in.	7.03
Waukegan 4 pt. 3 in. or 6 in.	7.03
ALLOY STEELS	**Per Net Ton**
Billets, blooms & slabs, forging quality	$71.76
	Per 100 lb
H. R. bars	$4.47
Plates	4.92
Standard structural shapes	4.57
H. R. strip	5.62
Cold-finished bars	5.17
HIGH STRENGTH STEELS	**Per 100 lb**
Corten:	
Plates	$5.87
Standard structural shapes	5.67
C. B. sections	5.62
H. R. bars and bar shapes	5.72
Manten:	
Plates	5.07
Standard structural shapes	4.87
C. B. sections	4.92
H. R. bars and bar shapes	4.77
Abrasion Resisting:	
Plates	5.17
H. R. bars	5.12

Doubt Puts Crimp in Joy

Pittsburgh — Uncertain conditions in the coal mining industry are reflected in the reduced earnings of Joy Mfg. Co. in the fiscal year ended Sept. 30 as compared with 1948 income, according to J. D. A. Morrow, president.

Commenting on 1949 earnings of $3,890,813 as compared with $6,958,925 in 1948, Mr. Morrow said:

"Reduced earnings of the company this year reflect the impact on our business of the long disturbed and uncertain conditions in the coal mining industry, with consequent curtailment and deferment of mechanization programs by mine operators. Our business not dependent on coal mining was generally well maintained with several domestic lines and our export total showing gratifying increases for the year."

Provides Educational Course

Detroit — To provide students with required background, Carboloy Co., Inc., Detroit, has designed a course specifically for educational institutions. The course covers in detail the design, selection, use and maintenance of cemented carbide tools.

The course is available to schools without charge except for slide films which are available at approximate print cost.

Reports on Radio-Active Wastes

Washington — A non-technical report on safe handling of radioactive wastes has been issued by the Atomic Energy Commission. It describes types and sources of wastes as well as radioactivity itself and its biological effects.

"Gentlemen! Hereafter kindly place any suggestions in the receptacle the company has provided."

Refractory Workers Sign New Bethlehem-Type Contract

Pittsburgh — A pension-insurance program patterned after the Bethlehem formula agreed to by the steel industry is incorporated into a new contract between the AFL United Brick and Clay Workers of America and 14 fire brick producers in Pennsylvania, Ohio, Kentucky and Missouri.

The agreements cover 3500 employes in 28 plants.

They become effective May 1, 1950. All present labor contracts have been extended to Apr. 30, 1952. The insurance and pension arrangements will continue until Apr. 30, 1955.

Companies covered by the agreement include General Refractories Co., North American Refractories Co., Harbison-Walker Refractories Co., Laclede-Christy Clay Products Co., Mexico Refractories Co., Stowe-Fuller Refractories Co., Robinson Clay Products Co., Walsh Refractories Co., Wellsville Fire Brick Co., J. H. France Refractories Co., Louisville Fire Brick Co., Hiram Swank Sons, Inc., Eureka Fire Brick Co., and Ironton Fire Brick Co.

Starts Mill Modernization

New York — Thomas Steel Co. has awarded a construction contract to F. H. McGraw & Co., New York, for a mill modernization program, work on which was started Dec. 15 at Thomas' Warren, Ohio plant. Main features of the program will be the erection of a cold-reduction mill and building changes.

Mechanical equipment will be supplied by United Engineering & Foundry Co. The main mill drives will be furnished by Westinghouse Corp., and General Electric Co. will supply auxiliary electrical equipment.

The reduction mill will be 3-stand, 4-high. This will be the second recent job the McGraw company has done for Thomas Steel. In May 1948, it completed a water treatment plant for the company at Warren.

ECA Loan to Be Repaid With Lead and Zinc for Stockpile

Washington — The Economic Cooperation Administration has signed a contract with the Newmont Mining Corp. with headquarters in New York by which the Marshall Plan agency will advance $3.6 million for the development of French Moroccan lead and zinc deposits.

Newmont is affiliated with and acting for the Societe des Mines de Zellidja, located at Boubaker. The Zellidja company will put up $10.5 million of its own funds for its expansion program.

The $14 million expansion program is expected to boost production of concentrates from the present 20,000 tons of lead concentrates to 85,000 tons and zinc from an estimated 32,000 tons to 120,000 tons.

The program involves a new mill including a crushing plant and additional grinding and flotation equipment. The ECA funds will be repaid over a period of 7 years in shipments of lead and zinc for the national stockpile.

Acts on Deferred Dividend

Pittsburgh—The board of directors of Pittsburgh Steel Co. has declared a regular dividend of $1.375 per share on the Prior Preferred Stock, First Series, 5½ pct, payable Dec. 30 to stockholders of record Dec. 23. This dividend had been deferred from Dec. 1 due to the steel strike.

Since dividends aggregating $6.25 per share have been paid this year on Class A 5 pct Preferred Stock, no action was taken with regard to this issue.

Finished Steel Shipments (Reported to American Iron and Steel Institute)

Steel Products	Number of companies	Items	SEPTEMBER-1949			To Date This Year		
			Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale) (Net Tons)	Per cent of Total Shipments	Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale (Net Tons)	Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale) (Net Tons)	Per cent of Total Shipments	Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale (Net Tons)
Ingots, blooms, slabs, billets, tube rounds, sheet and tin bars, etc.	47	1	125,177	2.4	154,807	1,872,452	3.9	1,749,204
Skelp	6	2	18,659	0.4	43,125	95,541	0.2	371,649
Wire rods	21	3	67,525	1.3	27,623	462,142	1.0	194,736
Structural shapes (heavy)	11	4	308,897	5.9	598	3,090,101	6.4	18,656
Steel piling	4	5	35,287	0.7	-	268,450	0.6	1,357
Plates	28	6	466,948	8.9	27,984	4,877,302	10.1	* 331,253
Rails—Standard (over 60 lbs.)	4	7	153,828	2.9	50	1,605,955	3.3	6,560
Rails—All other	5	8	7,986	0.2	50	103,183	0.2	1,520
Joint bars	7	9	5,364	0.1	1,312	94,437	0.2	24,694
Tie plates	6	10	23,297	0.4	-	340,913	0.7	41
Track spikes	8	11	5,597	0.1	-	85,502	0.2	35
Wheels (rolled or forged)	5	12	20,951	0.4	-	244,705	0.5	598
Axles	5	13	8,549	0.2	-	147,245	0.3	29
Hot rolled bars (including light shapes)	40	14	523,823	10.0	42,956	5,376,707	11.1	535,130
Hot rolled bars—Reinforcing	24	15	161,854	3.1	-	1,276,797	2.6	2,264
Cold finished bars	33	16	95,211	1.8	213	1,029,559	2.1	5,691
Tool steel bars	17	17	4,467	0.1	41	45,112	0.1	519
Pipe—Standard	17	18	198,832	3.8	5,173	1,739,984	3.6	41,761
Pipe—Line	13	19	258,705	4.9	2,103	* 2,029,640	4.2	14,763
Pipe—Oil country goods	14	20	123,780	2.4	8,643	1,179,565	2.4	73,470
Tubes—Boiler	3	21	9,972	0.2	672	96,609	0.2	7,367
Tubes—Mechanical and pressure	21	22	45,593	0.9	811	525,398	1.1	13,101
Miscellaneous pipe (including conduit)	12	23	17,744	0.3	112	187,943	0.4	1,134
Wire—Drawn	38	24	204,869	3.9	9,179	1,700,174	3.5	98,397
Wire—Nails and staples	17	25	66,021	1.3	522	608,907	1.3	6,468
Wire—Barbed and twisted	15	26	17,490	0.3	-	185,679	0.4	32
Wire—Woven wire fence	13	27	26,779	0.5	-	303,314	0.6	1,504
Wire—Bale ties	12	28	3,153	0.1	-	38,280	0.1	-
Black plate	10	29	35,872	0.7	-	385,844	0.8	254
Tin and terne plate—Hot dipped	10	30	169,731	3.2	-	1,415,317	2.9	10
Tin plate—Electrolytic	10	31	224,755	4.3	-	1,625,080	3.4	42
Sheets—Hot rolled	28	32	557,382	10.7	60,697	5,160,098	10.7	523,535
Sheets—Cold rolled	16	33	686,618	13.1	1,250	5,567,663	11.5	14,307
Sheets—Galvanized	15	34	195,409	3.7	-	1,390,523	2.9	504
Sheets—Long terne	9	35	14,005	0.3	-	120,491	0.3	505
Sheets—Enameling	7	36	11,396	0.2	-	135,641	0.3	1,631
Sheets—Electrical	11	37	32,534	0.6	-	299,744	0.6	-
Strip—Hot rolled	24	38	179,333	3.4	26,594	1,373,837	2.8	215,223
Strip—Cold rolled	35	39	122,139	2.3	1,932	1,186,727	2.5	18,242
All other	3	40	664	-	-	6,683	-	-
Total steel products	138	41	5,236,196	100.0	416,447	*48,279,244	100.0	*4,276,186

During 1948 the companies included above represented 99.5 % of the total output of finished rolled steel products as reported to the American Iron and Steel Institute.

* Revised.

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Steel Casting Executives Discuss Current Developments

Research and product development get attention.

Buffalo—Leading management and production executives of principal steel foundries in the Buffalo industrial area gathered here last week for a regional conference on current developments in the steel casting industry.

Meeting as designated members of Technical and Operating Group No. 2, Steel Founders' Society of America, the group focused emphasis on discussions of recent industry advances, research and product development undertakings of the society, and practical operating procedures resulting in lower costs and higher quality in the manufacture of steel castings.

Discuss Chipping Practices

Principal speakers at the dinner session held in the Hotel Stuyvesant were M. T. McPherson, foundry engineer, Symington-Gould Corp., Depew, N. Y., as chairman of the divisional group; William Quinn, cleaning room superintendant, Pratt & Letchworth Co., Inc., Buffalo; Wesley F. Lewis, metallurgist, Steel Founders' Society of America, Cleveland; and Joseph H. Sander, president, Tonawanda Electric Steel Casting Corp., Tonawanda, N. Y.

Research Project Highlighted

Prime topic at the meeting was the subject of chipping practices in steel foundry cleaning room operations. Basis of these discussions, lead by Mr. Quinn, was a society questionnaire in which members contributed salient data from actual operating experience, with detailed emphasis on factors of personnel selection, training and supervision; choice and maintenance of equipment and techniques involved; details of process control and inspection; new developments in the field; and extension of safety measures.

As metallurgist representing the society, Mr. Lewis, presented a composite report on results of the cooperative study, citing the aggregate findings and experience of the seven other technical and operating groups in other parts of the country.

In a special period devoted to fundamental research, Mr. Sander discussed the Society's Research Report No. 14, "Effect of Hydrogen and Nitrogen on the Ductility and Porosity of Cast Steels." The particular research study, it was pointed out, has received national recognition. Representing the first quantitative study on the hydrogen and nitrogen content of molten steel during the steel making process, the research results are credited with having been tremendously valuable to the entire steel industry.

Progress In Brass

New York—The brass industry is undergoing a modernization program so extensive that it approaches a technological revolution.

Scovill Manufacturing Co. has just put into operation at its Waterbury plant what is probably the world's most modern continuous brass strip mill. This mill establishes a number of new landmarks in brass processing technology. It processes the heaviest cold-rolled nonwelded brass coils in commercial use in the industry. Heart of the new $10 million mill is the flat metal continuous casting machine.

The Iron Age brings you a complete description of the design and operation of this mill in this issue, page 59. A limited number of reprints of this article will be available.

New Flooring Used for Trailers

Detroit—A fleet of 50 new flatbed trailers equipped with Nailable Steel Flooring was recently purchased by Geo. F. Alger Co., Detroit. The new trailers were built by Fruehauf Trailer Co.

Nailable steel flooring is produced by Great Lakes Steel Corp., Ecorse, Mich.

The new flooring is expected to last the life of the trailer and result in important economies in repairs and replacements.

Expects Canadian-Wisconsin Pipeline to be Completed in 1951

San Francisco—The 1150-mile-long pipeline which will carry oil from Edmonton, Canada to Superior, Wis., is expected to be completed early in 1951. The 18-in. and 20-in. diam portions of this line will be made by the A. O. Smith Corp. of Milwaukee.

Canadian Bechtel Ltd.-Fred Mannis & Co., Ltd., have received the prime contract for the construction of the 450-mile section between Edmonton and Regina. The 16-in. Regina-Gretna section and the 18-in. Gretna-Superior section will be constructed by William Bros. and Anderson Bros. respectively. The estimated cost of the project is $41 million and is being built by Inter Provincial Pipe Line Co., which is an associated firm with the Imperial Oil, Ltd.

The new line is expected to have a capacity of 95,000 bbl of oil a day between Edmonton and Regina where 25,000 bbl a day will be diverted to an Imperial refinery already there. Prospective rates have been set at 4.785¢ per 100 bbl miles which indicates a cost of approximately 55¢ to ship a bbl of crude oil from Edmonton to Superior as compared to $1.86 if shipped by railroad tank car.

The 16-in. diam pipe will be fabricated in Canada.

Expects Good Truck Production

Seattle—Kenworth Motor Truck Corp. expects business during 1950 to be at least as good as it was this year, according to company officials.

While business has fallen off for many truck manufacturers during the past year, Kenworth reports that production has been well above that of the average producer and attributes this condition to the production of heavy-duty trucks rather than just heavy trucks. Orders already on the books indicate production will be maintained at approximately the same rate during the first quarter of 1950 as prevailed in 1949.

Viewing the News from

The ECONOMIC SIDE

By JOSEPH STAGG LAWRENCE

"Not a Short Sale"

A GROWING number of solid citizens think this country is headed for socialism of the British type; that it will come tomorrow; that there is nothing we can do about it.

The evidence and the reasoning? The defeat of Dulles in the New York senatorial contest; the growing headway of public housing, Federal aid to education, socialized medicine; a looming budget deficit in a period of boom prosperity; an announced intention to resist any return to the gold standard or honest money; the presence of more than five million citizens on public relief rolls; the complete failure to restrain labor monopoly.

This is part of the evidence. The argument is that you cannot lick Santa Claus. The voter is venal. He can be bought. More than that, he is eager to be bought and will ostracize the candidate with the courage to renounce in advance any attempt to buy the voter.

The men who accept this testimony and the supporting logic are realists — successful, hard-headed citizens who do not believe in kidding themselves. Yet they may be wrong. Capitulation to the soft-boiled, power-hungry standard bearers of the welfare state may be premature.

The ousting of labor governments in New Zealand and Australia is not conclusive. Yet they are significant straws in the wind. In these two Anglo-Saxon communities the voters have had a good look at socialism in practice. They have compared performance with the blueprints of the future offered by the architects of Utopia. More than half of the voters in these two elections "down under" have said: "No, thank you. We want a little less of the rainbow and a little more of the realities, however stern they may be."

In our own country Secretary Brannan is being spanked by the intended beneficiaries of a magnificent hand-out which he had contrived, which he and his chief still feel is a sure magnet for the voters. His scheme assures high prices for the farmer and low prices for the consumer. What the tab will be to the taxpayer Mr. Brannan has not indicated because he frankly admits he does not know.

A careful reading of a half dozen farm periodicals, including the influential *Farm Journal*, fails to reveal a good word for the Brannan Plan. Every one of them regards it as a weasel device for ensnaring the farmer, deceiving the consuming public, and placing an unconscionable burden upon the taxpayer.

Organized farm groups generally are opposed to the Brannan Plan. The American Farm Bureau pointedly failed to invite the Secretary of Agriculture to address its annual convention. When advised of the Cabinet member's pique over this "affront," the President of the AFB chided the Secretary for implying that "a group of free American citizens cannot objectively discuss both sides of questions of policy unless the discussion is guided by some federal appointee."

These farmers are average American citizens. They are certainly as bright but no brighter than the rest of us. They are as devoted to their country but no more so than the rest of us. They understand their own interests and are as eager to promote them as are the rest of us. In other words, they are exercising that vigilance which is the proverbial price of liberty. As long as a ten-million-member group of American citizens is making this response to politically proffered pap, the future of this country should not be sold short.

Canadian Pig Iron, Ferroalloy Production Set 10-Month Records

Toronto—Canadian pig iron production in October was at the lowest monthly rate since February 1948, and amounted to 166,020 net tons, and compares with 168,436 tons in September, and with 186,424 tons in October 1948.

For the 10 months ending with October pig iron production totaled 1,825,023 net tons, a new all-time high record, and compares with 1,779,905 tons in the corresponding period of 1948 and with 1,630,149 in 1947.

Production of ferroalloys in October amounted to 15,456 net tons, compared with 12,250 tons in September and 19,489 tons in October 1948.

In the 10 months ended Oct. 31, output of ferroalloys totaled 184,992 net tons, a new record, and compares with 147,099 tons in the like period of 1948 and with 127,393 tons in 1947.

Following are comparative monthly production figures for 1949 in net tons:

Month	Pig Iron	Ferroalloys
January	183,074	21,931
February	172,724	21,713
March	202,130	22,457
April	180,740	24,427
May	202,148	20,652
June	194,255	19,264
July	175,381	14,280
August	180,115	12,562
September	168,436	12,250
October	166,020	15,456
Total 10 Mos.	1,825,023	184,992
	1948	
January	160,042	17,125
February	151,123	11,823
March	172,675	14,293
April	170,785	14,474
May	193,305	18,436
June	183,763	13,502
July	187,940	12,939
August	191,383	12,700
September	182,465	12,318
October	186,424	19,489
November	166,771	17,594
December	174,233	23,708
Total 12 Mos.	2,120,909	188,401

Will Modernize Roundhouse

Buffalo — Approximately $300,000 will be spent by the South Buffalo Ry. Co., which serves industries near the Bethlehem Steel Co.'s Lackawanna plant, to modernize its roundhouse at the foot of Warsaw Ave., Lackawanna.

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Spent $90 Million to Aid Distressed Employment Areas

Washington — Presidential Assistant John Steelman recently said that the government has spent approximately $90 million in 35 distressed employment areas during the 1949 third quarter.

This includes more than $65 million in public works contracts, including the share contributed by the states of some $17 million. It also includes $2 million in loans by the RFC and another $100,000 by REA for rural power projects.

Nearly $22 million in normal procurement contracts by departments and agencies were awarded within the areas. While ECA procurements for the most part are made through exporters, Mr. Steelman estimates that close to $6 million in ECA procurements was so spent.

Provides Free Weighing Service

Detroit—The Trailmobile Co. of Detroit is providing a unique new service for truck owners.

At its branch plant, 4041 Central Ave., Detroit, Trailmobile will weigh trucks free of charge on its new gigantic scale and give certified weight slips to be used in obtaining 1950 license plates. The company is also attempting to provide 1950 plates for trucking concerns.

The new Trailmobile facilities which will be completed in February comprise 25,000 sq ft of floor space devoted to service for truck and trailer operators.

Cutting Tool Assn. Elects

Detroit — Emil Gairing, president, Gairing Tool Co., Detroit, has been reelected president of the Cutting Tool Manufacturers Assn.

Reelected as vice-president was Norman Lawton, works manager, star Cutter Co., Detroit. R. S. Spencer, president, Detroit Boring Bar Co., was reelected treasurer.

In addition to officers, the following directors have been reelected for a 3-year term: E. A. Goddard, president, Goddard & Goddard Co., Detroit; D. E. VanDeusen, president and general manager, Kelly Reamer Co., Cleveland. Melvin L. Weinberg, sales manager, Putnam Tool Co., Detroit, was elected to the board of directors for a 3-year term.

Steel Strike Blamed For Decrease in N. Y. Employment

New York—Manufacturing employment in New York State in October totaled an estimated 1,793,500 workers, 7900 less than in September, according to Acting Industrial Commissioner Thomas F. Moore, Jr. The decrease was attributed mainly to the steel strike which closed virtually all steel mills in the State.

Among the durable goods industries, sizable employment increases were reported by radio and television plants, and small gains by wire and cable firms, furniture and glass factories.

Employment was up 0.4 percent in nondurable goods categories. Seasonal losses in food and apparel were more than offset by gains in paper, tobacco, textiles, printing chemicals and leather.

Urge Agreement on Steel Pricing Tangle to Cut Cost

Washington — Attorneys representing the steel industry last week filed a brief with the Federal Trade Commission upholding the right of industry and the commission to agree upon a cease and desist order with respect to use of the basing point pricing system.

Approval of this action between FTC Counsel Lynn Paulson and steel attorneys automatically stops the commission's suit against the industry, charging conspiracy to use the basing point as a price-fixing device. Commission Counsel Whiteley opposed the action.

Mr. Whiteley contends that the commission has no authority to make such agreements, that the case should be carried through to a "finding of facts."

Industry attorneys hold that fighting a case to the bitter end at "excessive cost" to government and industry is necessary only when "respondents choose to contest" charges. In the basing point case, the industry has chosen to consent to a proposed order and has waived its right to appeal.

NEW AUTO-FLOOR MANIPULATOR: This diesel-powered self-propelled machine has just been completed by Edgar E. Brosius Co., Inc., Pittsburgh, for Nazionale Cogne steel plant at Torino, Italy. It weighs 33,000 lb and has a capacity to handle a 10,000 bloom or forging blank. All movements except travel over the floor, including steering, are actuated hydraulically.

Construction Steel Awards

Fabricated steel awards this week included the following:

2700 Tons, Philadelphia, Veteran's Administration hospital, to John McShain, Philadelphia.

900 Tons, Frederick, Md., bridge over the Monocacy River, Maryland State Roads Commission, to American Bridge Co., Pittsburgh.

835 Tons, Kootenai County, Idaho, Blue Creek Bay Bridge, through Paul Jarvis, Inc., Seattle, to Virginia Bridge Co., Roanoke, Va.

540 Tons, Kootenai County, Idaho, Blue Creek Bay Bridge, through Paul Jarvis, Inc., Seattle, to Consolidated Western Steel Co.

150 Tons, West Point, Pa., research laboratory for Sharpe & Dohme, to Frank M. Weaver Co., Lansdale, Pa.

Fabricated steel inquiries this week included the following

2500 Tons, Philadelphia, apartment buildings, through Turner Construction Co., Philadelphia, due Dec. 28.

385 Tons, Essex County, N. J., bridge on Route 25A (lc), New Jersey Dept. of Highways, due Jan. 12.

150 Tons, Frederick, Md., bridge over B. & O. Railroad in Washington National Park, Maryland State Roads Commission, due Dec. 27.

Reinforcing bar awards this week included the following:

800 Tons, Philadelphia Veterans Administration hospital, John McShain, Philadelphia, low bidder.

600 Tons, Philadelphia, Youth Study Center, McCloskey & Co., Philadelphia, low bidder.

550 Tons, Los Angeles, two bridges on Harbor Freeway, through Oberg Bros., Inglewood, Calif., to Trojan Steel, Inc., Los Angeles.

465 Tons, Los Angeles, Unit B, Engineering Building, University of California at Los Angeles, through Robert E. McKee, Los Angeles, to Soule Steel Co., San Francisco.

460 Tons, Chicago, research hospital, through Patrick Warren Construction Co., Chicago, to U. S. Steel Supply Co., Chicago.

450 Tons, Plainfield, Ind., building for Indiana Public Service Co., through Paschen Construction Co., Chicago, to Bethlehem Steel Co., Pittsburgh.

450 Tons, Chicago, warehouse for Admiral Corp. Bids closed Dec. 13.

400 Tons, Salem, Ore., Highway Office building, through Sound Construction & Engineering Co., Seattle, to Soule Steel Co., San Francisco.

200 Tons, West Point, Pa., research laboratory for Sharpe & Dohme, through H. E. Baton, Philadelphia, to Concrete Steel Co., New York.

200 Tons, Gloucester, N. J., sewage plant, C & T Construction Co., Collingswood, N. J., low bidder.

170 Tons, Harvard and Littleton, Mass., State Highway construction, Carlo Bianchi & Co., Framingham, Mass., awarded contract.

135 Tons, Evanston, Ill., addition to Evanston High School, bids closed Dec. 14.

120 Tons, Chicago, building for Helene Rubenstein, bids closed Dec. 16.

105 Tons, Kootenai County, Idaho, Blue Creek Bay Bridge, through Paul Jarvis, Inc., Seattle, to Bethlehem Pacific Coast Steel Corp., San Francisco.

Reinforcing bar inquiries this week included the following:

740 Tons, Ft. Wayne, Ind., Memorial Coliseum.

510 Tons, Muroc, Calif., Rocket Engine Test Station, Los Angeles District Corps of Engineers, Ser. No. ENG-04-353-50-10, bids to Jan. 10.

315 Tons, Cook County, Ill., highway bridge.

290 Tons, Chicago, Little Calumet River bridge.

265 Tons, Allegheny County, Pa., Dravosburg Bridge.

230 Tons, Los Angeles, bridge across San Gabriel River on Park Ave., California Div. of Highways, Los Angeles, bids to Jan. 12.

165 Tons, Sacramento, Calif., transmission line, Shasta-Tracy No. 1 and 2, Bureau of Reclamation, Sacramento, Calif., Spec. 2848, bids to Jan. 12.

145 Tons, Cairo, Ill., Mississippi River levee.

125 Tons, Decatur, Ill., grade school building.

105 Tons, Menasha, Wis., highway bridge to C. R. Meyer Sons, Oshkosh, Wis.

Steel piling awards this week included the following:

500 Tons, Los Angeles, two bridges on Harbor Freeway, through Oberg Bros., Inglewood, Calif., to Bethlehem Pacific Coast Steel Corp., San Francisco.

365 Tons, Kootenai County, Idaho, Blue Creek Bay Bridge, through Paul Jarvis, Inc., Seattle, to Columbia Steel Co., San Francisco.

AMERICAN IRON AND STEEL INSTITUTE

Production of Open Hearth, Bessemer and Electric Steel Ingots and Steel for Castings

YEAR 1949

(Preliminary)

Period	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (Net tons)	Number of weeks in month
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity		
January	7,287,683	101.1	408,552	92.6	487,260	93.8	8,183,495	100.2	1,847,290	4.43
February	6,633,779	102.0	379,698	95.3	467,247	99.6	7,480,724	101.4	1,870,181	4.00
March	7,473,901	103.7	430,176	97.5	483,850	93.2	8,387,927	102.7	1,893,437	4.43
1st Quarter	*21,395,363*	*102.3*	*1,218,426*	*95.2*	*1,438,357*	*95.4*	*24,052,146*	*101.5*	*1,870,307*	*12.86*
April	7,015,611	100.5	404,095	94.6	365,570	72.7	7,785,276	98.4	1,814,750	4.29
May	6,889,230	95.6	400,741	90.9	299,751	57.7	7,589,722	92.9	1,713,256	4.43
June	5,954,619	85.3	349,196	81.8	194,386	38.6	6,498,201	82.2	1,514,732	4.29
2nd Quarter	*19,859,460*	*93.8*	*1,154,032*	*89.1*	*859,707*	*56.4*	*21,873,199*	*91.2*	*1,681,260*	*13.01*
1st 6 months	*41,254,823*	*98.0*	*2,372,458*	*92.1*	*2,298,064*	*75.8*	*45,925,345*	*96.3*	*1,775,236*	*25.87*
July	5,307,471	73.8	300,236	68.2	171,415	33.1	5,779,122	70.9	1,307,494	4.42
August	6,101,499	84.7	355,335	80.6	257,910	49.7	6,714,744	82.2	1,515,744	4.43
* September	5,992,306	86.1	350,282	82.2	247,601	49.3	6,590,189	83.5	1,539,764	4.28
* *3rd Quarter*	*17,401,276*	*81.5*	*1,005,853*	*76.9*	*676,926*	*44.0*	*19,084,055*	*78.8*	*1,453,470*	*13.13*
* *9 months*	*58,656,099*	*92.5*	*3,378,311*	*87.0*	*2,974,990*	*65.1*	*65,009,400*	*90.4*	*1,666,908*	*39.00*
* October	814,374	11.3	——	—	111,708	21.5	926,082	11.3	209,048	4.43
† November	3,754,982	53.8	172,270	40.3	218,042	43.4	4,145,294	52.4	966,269	4.29
December										4.42
4th Quarter										*13.14*
2nd 6 months										*26.27*
Total										*52.14*

Note—The percentages of capacity operated are calculated on weekly capacities of 1,626,717 net tons open hearth, 99,559 net tons Bessemer and 117,240 net tons electric ingots and steel for castings, total 1,843,516 net tons; based on annual capacities as of January 1, 1949 as follows: Open hearth 84,817,040 net tons, Bessemer 5,191,000 net tons, Electric 6,112,890 net tons, total 96,120,930 net tons.

† Preliminary figures, subject to revision.
* Revised.

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Briefs and Bulletins

hot and cold-rolled sheets — The spread between hot-rolled and cold-rolled sheets is a little narrower under the new U. S. Steel base and extra prices. On 18 gage sheets 23 15/16-in. wide, 90 to 192 in. long, the extra for gage and widths was 60¢ per 100 lb, with nothing for length and cut edge—for a total price of $3.85. The same dimensions in cold-rolled sheets took a 15¢ extra for gage and width only—for a total price of $4.15. The new hot-rolled sheet schedule includes extras of 45¢ for gage and width, 20¢ for length and 25¢ for cut edge—total $4.25. The cold-rolled sheet extras are now 30¢ for gage and width and 10¢ for length—total $4.50. This reduces the spread between hot and cold-rolled sheets in this popular size from $6 to $5 a ton.

enameled steel—Shipments of porcelain enameled steel fixtures during the third quarter of 1949 represented an increase of 27 pct over the second quarter of the year, according to the Porcelain Enamel Institute. Porcelain enameled bathtubs shipped in the third quarter increased about 34 pct, or 20,000 units over the 61,000 units shipped during the second quarter. Steel sink shipments totaled 255,000, an increase of 20,000 over the previous quarter, and porcelain enameled steel lavatory shipments 39 pct, or 13,000 units.

raise prices—Tuesday night Republic Steel Corp. and Armco Steel Corp. announced price increases averaging about $4 a ton on a wide range of products. Republic said that a study of materials costs made last August showed even then an increase over 1948 cost of approximately 7 pct and that further studies since then show that many prices have gone even higher. J. & L. Superior Steel Corp. and Pittsburgh Steel Co. also revealed plans to raise prices within the next few days to offset higher costs.

reviving openhearths—Phoenix Iron & Steel Co. will start up some of its openhearths about the middle of January. The company has recently been rushing to completion its work on the furnaces. Expecting the early curtailment of billet supply from another source.

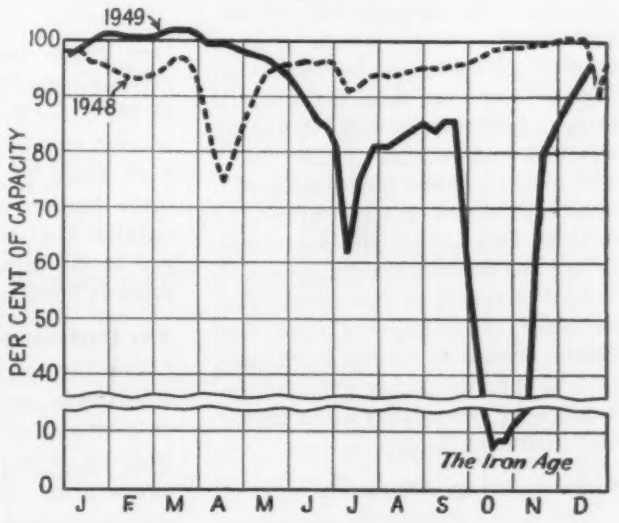
conversion complicated—As might be expected, the recent price increase has added tremendous complications in figuring the cost of conversion programs. Steel buyers who have made conversion committments are having a difficult time figuring what their final costs will be.

strike loss—Over 25 million workers have forfeited about $3 billion in wages because of strikes since 1937, according to the National Industrial Conference Board. The direct loss to workers on strike amounted to at least $25 million in wages each year since 1937, the board said, Even during 1943 and 1944, when patriotism, government intervention and public sympathy tended to reduce the number of strikes, wage losses accruing from strikes totaled more than $100 million and $70 million respectively in the 2 years, the board reported.

forecast—Optimism in the retail and wholesale hardware distribution fields for the first quarter of 1950, compared to the same period in 1949, is rather general, *Hardware Age* reports. Opinions range from as good as the first quarter of 1949 to varied estimates showing anticipation of even better volume. Estimated sales volume in the wholesale hardware field for the first quarter of 1949 was $584 million.

new mill—Alan Wood's new 30-in. strip mill went into operation on a test run this week. The mill is not expected to be put on a regular operating basis until next month, at which time there will no longer be a surplus of billet capacity at the mill.

Steel Operations



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
December 11	97.5*	98.0*	81.0	85.0	110.0*	103.5	106.0	103.0	105.0*	92.0	89.0	89.5	96.5	94.0
December 18	97.0	96.5	85.0	85.0	103.0	103.5	96.5	103.0	101.0	94.5**	89.0	89.5	96.0	94.5

* Revised.
** Estimated.

Nonferrous METALS OUTLOOK

Market Activities

by John Anthony

December copper deliveries will exceed 110,000 tons . . . November inventories drop 25,000 tons . . . Tin price 78¼¢ . . . Strikes still pending.

New York—With the exception of the current heavy demand for copper, the metal markets are subject to the usual pre-holiday season lull.

Sales of copper for December delivery had already reached the 100,00 ton level by the end of last week. This indicates that December deliveries will exceed 110,000 tons for the second month in succession. November deliveries of 118,146 tons, as reported by the Copper Institute, brought down industry inventories to 139,285 tons. The drop of 25,000 tons during the month followed quickly after inventory drops of 29,000 and 23,000 in the two previous months.

As the result of the developing shortage of copper to meet the heavy sustained demand, Kennecott Copper Corp. has put into effect a 6-day work week at its mines and plants in Utah.

Copper Scrap Advances

The refinery scrap buying prices were advanced another ¼¢ last week, bringing the price of No. 1 heavy copper to 15.25¢. Scrap is being sought at ¼¢ higher for export. These scrap prices are not yet high enough to put primary copper prices under pressure. One of the significant facts of the November institute figures shows that crude copper production is climbing rapidly, having reached 67,675 tons. But there is still some margin between this figure and the high point of the year at 79,000 tons. Market observers are of the opinion that when all the factors are taken into consideration, the price is not likely to rise this year.

Tin Still on Downgrade

The tin market was still on the downgrade early this week. RFC puts into effect a ¼¢ reduction on Dec. 14. The market held at this figure until the 16th when offerings were made at 78.25¢. Three days later, RFC accepted this figure as its selling price. With the continued decline in the tin market, buyers are taking very little.

Bronze ingot producers made reductions last week in their prices of tin containing bronze compositions, to take into consideration the repeated declines in the tin price. Ingot producers have made no advances in prices to compensate for the high prevailing scrap prices.

There were no new developments in the strike situation early this week. The Selby, Calif., smelter is still on strike, but this has not spread to eastern smelters. Western consumers of lead are reported to be well fixed for the time. There have been no developments at Perth Amboy or Laurel Hill, but both plants are still operating.

Tin Ore Production Rises

Thailand's tin ore production in the first 8 months of this year exceeded the total output for 1948, the amounts being 6621 and 5889 long tons respectively, the Dept. of Commerce reports. Shipments to the United States in the first 9 months of this year totaled about 3000 tons.

NONFERROUS METALS PRICES

	Dec. 14	Dec. 15	Dec. 16	Dec. 17	Dec. 19	Dec. 20
Copper, electro, Conn.	18.50	18.50	18.50	18.50	18.50	18.50
Copper, Lake, Conn.	18.625	18.625	18.625	18.625	18.625	18.625
Tin, Straits, New York ...	78.75	78.75	78.25	78.25	78.25	78.25
Zinc, East St. Louis	9.75	9.75	9.75	9.75	9.75	9.75
Lead, St. Louis	11.80	11.80	11.80	11.80	11.80	11.80

Note: Quotations are going prices.

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Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.3¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.032 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: ¼ in. and heavier: 2S, 3S, F, 23.8¢; 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 24S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4, 33.6¢ to 64¢; 11 to 13, 34.6¢ to 76¢; 23 to 25 36.7¢ to $1.05; 35 to 37, 44¢ to $1.53; 47 to 49, 63.5¢ to $2.20.

Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 34¢ to 30.5¢; Cold-finished, 0.375 to 3 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Drawn, ⅛ to 11/32 in., 11S-T3, R317-T4, 49¢ to 38¢; cold-finished, ⅜ to 1½ in., 11S-T3, 37.5¢ to 35.5¢; ⅜ to 2 in., R317-T4, 37.5¢ to 34.5¢; rolled, 1 9/16 to 3 in., 11S-T3, 35.5¢ to 32.5¢; 2⅛ to 3⅝ in., R217-T4, 33.5¢ to 32.5¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 38.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 84¢; 75S-T-6, 76¢ to 55¢.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed Base quantity 30,000 lb)

Sheets and Plate: Ma, FSa, ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher.

Extruded Round Rod: M, diam in., ⅜ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢ 2½ to 5, 41¢. Other alloys higher.

Extruded Square, Hex. Bar: M, size across flats, in., ⅜ to 0.311, 61¢; ½ to 0.749, 48¢; 1¼ to 1.749, 44¢; 2½ to 4, 42¢. Other alloys higher.

Extruded Solid Shapes, Rectangle: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb per ft, per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢; 0.065 to 0.082, ⅜ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢; 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher.

Nickel and Monel

(Base prices, cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	60	47
Strip, cold-rolled	66	50
Rods and bars	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks	..	40

Copper, Brass, Bronze

(Cents per lb, freight prepaid on 200 lb)

	Sheets	Rods	Extruded Shapes
Copper	32.18	....	31.78
Copper, h-r	....	28.03	....
Copper, drawn	....	29.28	....
Low brass	30.12	29.81	33.03*
Yellow brass	28.69	28.38	31.70*
Red brass	30.60	30.29	33.51*
Naval brass	33.51	27.57	28.82
Leaded brass	....	23.19	27.22
Com'l bronze	31.61	31.30	34.27*
Manganese bronze	37.01	30.92	32.42
Phosphor bronze	50.90	51.15	....
Muntz metal	31.58	27.14	28.39
Everdur, Herculoy, Olympic, etc.	37.19	36.14	....
Nickel silver, 10 pct	39.66	41.87	46.80
Arch. bronze	....	....	27.22

*Seamless tubing.

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, 10,000 lb, freight allowed	17.00
Aluminum pig	16.00
Antimony, American, Laredo, Tex.	32.00
Beryllium copper, 3.75-4.25% Be dollars per lb contained Be	$24.50
Beryllium aluminum 5% Be, dollars per lb contained Be	$52.00
Bismuth, ton lots	$2.00
Cadmium, del'd	$2.00
Cobalt, 97-99% (per lb)	$1.80 to $1.87
Copper, electro, Conn. Valley	18.50
Copper, lake, Conn. Valley	18.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$100 to $110
Lead, St. Louis	11.80
Lead, New York	12.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	20.50
Magnesium, sticks, car lots	34.50
Mercury, dollars per 76-lb flask f.o.b. New York	$70 to $73
Nickel, electro, f.o.b. New York	42.97
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$69 to $72
Silver, New York, cents per oz.	73.25
Tin, New York	78.25
Zinc, East St. Louis	9.75
Zinc, New York	10.47
Zirconium copper, 10-12 pct Zr, per lb contained Zr	$12.00

Remelted Metals

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot	
No. 115	16.75-18.25
No. 120	16.25-17.75
No. 123	15.75-17.25
80-10-10 ingot	
No. 305	21.75
No. 315	19.75
88-10-2 ingot	
No. 210	27.75
No. 215	25.25
No. 245	18.25-21.00
Yellow ingot	
No. 405	14.25-16.00
Manganese bronze	
No. 421	20.75

Aluminum Ingot

(Cents per lb, lot of 30,000 lb)

95-5 aluminum-silicon alloys	
0.30 copper, max.	18.50-19.00
0.60 copper, max.	18.25-18.75
Piston alloys (No. 122 type)	16.50-17.00
No. 12 alum. (No. 2 grade)	16.25-16.75
108 alloy	16.75-17.25
195 alloy	17.50-18.00
13 alloy	18.50-19.00
AXS-679	16.75-17.25
5% Ti, Aluminum, f.o.b., Eddystone, Pa.	
Low copper	31.00
2% copper	28.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	17.75-18.50
Grade 2—92-95%	16.75-17.50
Grade 3—90-92%	15.75-16.50
Grade 4—85-90%	15.25-15.75

Electroplating Supplies

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	35½
Electrodeposited	29¾
Rolled, oval, straight, delivered	33
Ball anodes	33¾
Brass, 80-20	
Cast, oval, 15 in. or longer	31¼
Zinc, oval, 99.886, f.o.b. Detroit	17¼
Ball anodes	16¼
Nickel 99 pct plus	
Cast	59.00
Rolled, depolarized	60.00
Cadmium	$2.15
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	79

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	46½
Copper sulfate, 99.5 crystals, bbl	11.10
Nickel salts, single or double, 4-100 lb bags, frt allowed	18.00
Nickel chloride, 300 lb bbl	24.50
Silver cyanide, 100 oz lots, per oz	59
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc sulfate, 89 pct granular	11.00
Zinc cyanide, 100 lb drums	38.00

Scrap Metals

Brass Mill Scrap

(Cents per pound; add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	15½	14¾
Yellow brass	12½	11⅞
Red brass	14	13¼
Commercial bronze	14¼	13½
Manganese bronze	12	11¼
Leaded brass rod ends	12¼	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	15.25
No. 2 copper wire	14.25
Light copper	13.25
Refinery brass	13.00*
Radiators	9.50

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper wire	15.25
No. 2 copper wire	14.25
Light copper	13.25
No. 1 composition	12.50
No. 1 comp. turnings	12.00
Rolled brass	10.50
Brass pipe	10.50
Radiators	9.25- 9.50
Heavy yellow brass	9.50
Aluminum	
Mixed old cast	10.00-10.50
Mixed old clips	10.00-10.50
Mixed turnings, dry	8.50- 9.00
Pots and pans	10.00-10.50
Low copper	11.50-12.00

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	13¼—13½
No. 2 heavy copper and wire	12¼—12½
Light copper	11¼—11½
Auto radiators (unsweated)	8 — 8¼
No. 1 composition	10½—10¾
No. 1 composition turnings	10 —10½
Clean red car boxes	8¾— 9
Cocks and faucets	8¾— 9
Mixed heavy yellow brass	6¾— 7
Old rolled brass	8 — 8¼
Brass pipe	8¾— 9
New soft brass clippings	10½—11
Brass rod ends	9¾—10
No. 1 brass rod turnings	9½— 9¾

Aluminum

Alum. pistons and struts	4½— 5
Aluminum crankcases	7½— 8
2S aluminum clippings	10½—11
Old sheet and utensils	7½— 8
Borings and turnings	4
Misc. cast aluminum	7½— 8
Dural clips (24S)	7½— 8

Zinc

New zinc clippings	6 — 6½
Old zinc	4 — 4½
Zinc routings	2½— 3
Old die cast scrap	3¼— 3½

Nickel and Monel

Pure nickel clippings	21 —23
Clean nickel turnings	14 —15
Nickel anodes	20 —22
Nickel rod ends	20 —22
New Monel clippings	12 —14
Clean Monel turnings	8 — 9
Old sheet Monel	10 —12
Old Monel castings	9 —10
Inconel clippings	11 —13
Nickel silver clippings, mixed	8 —10
Nickel silver turnings, mixed	6 — 7

Lead

Soft scrap, lead	9 — 9¼
Battery plates (dry)	4¼— 4½

Magnesium

Segregated solids	9 —10
Castings	5½— 6½

Miscellaneous

Block tin	60 —62
No. 1 pewter	38 —40
No. 1 auto babbitt	35 —37
Mixed common babbitt	9 — 9¼
Solder joints	11½—12
Siphon tops	40 —42
Small foundry type	11½—12
Monotype	10½—11
Lino. and stereotype	9¾—10¼
Electrotype	8¼— 8½
New type shell cuttings	11½—11¾
Hand picked type shells	4 — 4½
Lino. and stereo. dross	4¾— 5
Electro. dross	2¾— 3

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	Dec. 20, 1949	Dec. 13, 1949	Nov. 22, 1949	Dec. 21, 1948
Hot-rolled sheets	3.25	3.25	3.25	3.26
Cold-rolled sheets	4.00	4.00	4.00	4.00
Galvanized sheets (10 ga)	4.40	4.40	4.40	4.40
Hot-rolled strip	3.25	3.25	3.25	3.265
Cold-rolled strip	4.038	4.038	4.038	4.063
Plates	3.40	3.40	3.40	3.42
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	33.00	33.00	33.00	33.25
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes	$7.75	$7.75	$7.75	$6.80
Tinplate, electro (0.50 lb)	6.70	6.70	6.70	6.00
Special coated mfg. ternes	6.65	6.65	6.65	5.90
Bars and Shapes: (cents per pound)				
Merchant bars	3.35	3.35	3.35	3.37
Cold-finished bars	3.995	3.995	3.995	3.995
Alloy bars	3.75	3.75	3.75	3.75
Structural shapes	3.25	3.25	3.25	3.25
Stainless bars (No. 302)	28.50	28.50	28.50	28.50
Wrought iron bars	9.50	9.50	9.50	9.50
Wire: (cents per pound)				
Bright wire	4.15	4.15	4.15	4.256
Rails: (dollars per 100 lb)				
Heavy rails	$3.20	$3.20	$3.20	$3.20
Light rails	3.55	3.55	3.55	3.55
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$52.00	$52.00	$52.00	$52.00
Slabs, rerolling	52.00	52.00	52.00	52.00
Forging billets	61.00	61.00	61.00	61.00
Alloy blooms, billets, slabs	63.00	63.00	63.00	63.00
Wire rod and Skelp: (cents per pound)				
Wire rods	3.40	3.40	3.40	3.619
Skelp	3.25	3.25	3.25	3.25

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron: (per gross ton)	Dec. 20, 1949	Dec. 13, 1949	Nov. 22, 1949	Dec. 21, 1948
No. 2, foundry, Phila.	$50.42	$50.42	$50.42	$51.56
No. 2, Valley furnace	46.50	46.50	46.50	46.50
No. 2, Southern Cin'ti	46.08	46.08	46.08	49.47
No. 2, Birmingham	39.38	39.38	39.38	43.38
No. 2, foundry, Chicago†	46.50	46.50	46.50	46.50
Basic del'd Philadelphia	49.92	49.92	49.92	50.76
Basic, Valley furnace	46.00	46.00	46.00	46.00
Malleable, Chicago†	46.50	46.50	46.50	46.50
Malleable, Valley	46.50	46.50	46.50	46.50
Charcoal, Chicago	68.56	68.56	68.56	73.78
Ferromanganese‡	173.40	173.40	173.40	161.71

†The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.

Scrap: (per gross ton)	Dec. 20, 1949	Dec. 13, 1949	Nov. 22, 1949	Dec. 21, 1948
Heavy melt'g steel, P'gh.	*$29.75*	$30.75	$33.75	$42.75
Heavy melt'g steel, Phila.	24.50	24.50	25.50	44.50
Heavy melt'g steel, Ch'go	26.50	26.50	30.50	41.75
No. 1 hy. com. sh't, Det.	26.50	26.50	30.50	38.00
Low phos. Young'n	*31.75*	32.75	36.75	47.75
No. 1, cast, Pittsburgh	*38.50*	39.50	39.50	70.00
No. 1, cast, Philadelphia	38.00	38.00	38.00	65.50
No. 1, cast, Chicago	*38.50*	39.50	44.50	68.50
Coke: Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.00	$14.00	$14.25	$15.00
Foundry coke, prompt	15.75	15.75	15.75	17.00
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	18.50	18.50	18.50	23.50
Copper, Lake Conn.	18.625	18.625	18.625	23.625
Tin Straits, New York	*78.25*	79.00	85.00	$1.03
Zinc, East St. Louis	9.75	9.75	9.75	17.50
Lead, St. Louis	11.80	11.80	11.80	21.30
Aluminum, virgin	17.00	17.00	17.00	17.00
Nickel electrolytic	42.97	42.97	42.97	42.90
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	32.00	32.00	32.00	35.00

Composite Prices

***NOTE: This week's finished steel composite is tentative, showing what it would be if all steel companies met U. S. Steel prices. It is calculated this way because it was impossible at press time to tell just what companies had met the U. S. Steel quotations.**

	Finished Steel Base Price* (see note)	Pig Iron	Scrap Steel
Dec. 20, 1949	3.835¢ per lb.*	$45.88 per gross ton	*$26.92* per gross ton
One week ago	3.705¢ per lb.	45.88 per gross ton	27.25 per gross ton
One month ago	3.705¢ per lb.	45.88 per gross ton	29.92 per gross ton
One year ago	3.720¢ per lb.	46.91 per gross ton	43.00 per gross ton

	Finished Steel High	Finished Steel Low	Pig Iron High	Pig Iron Low	Scrap Steel High	Scrap Steel Low
1949	3.835¢* Dec. 20	3.705¢ May 3	$46.82 Jan. 4	$45.88 Sept. 6	$43.00 Jan. 1	$19.33 June 28
1948	3.721¢ July 27	3.193¢ Jan. 1	46.91 Oct. 12	39.58 Jan. 6	43.16 July 27	39.75 Mar. 9
1947	3.193¢ July 29	2.848¢ Jan. 1	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May 20
1946	2.848¢ Dec. 31	2.464¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.464¢ May 29	2.396¢ Jan. 1	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.396¢	2.396¢	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.396¢	2.396¢	23.61	23.61	$19.17	$19.17
1942	2.396¢	2.396¢	23.61	23.61	19.17	19.17
1941	2.396¢	2.396¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 3
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

UNIVERSITY OF MICHIGAN LIBRARIES

MARKETS—PRICES—TRENDS

SCRAP
Iron & Steel

Price Weakness Hits Steelmaking Grades

Scrap prices were down again this week and the market appears to be leveling off. There was little material moving, and what there was consisted of shipments on old commitments. There is talk of increased activity during January, but some sources do not expect a buying movement to get underway until February. Scrap movement into the yards remains good due to favorable weather conditions. It is expected that some of the mills will become more selective in the quality of scrap being purchased.

This week the top quotation of No. 1 steel was off $2.00 in Birmingham; in Buffalo it was down $1.50 on sales of approximately 20,000 tons; in Pittsburgh, Youngstown, Cleveland and Boston it was off $1.00; and in Cincinnati it was off 50¢. THE IRON AGE scrap composite is off 33¢ a ton to $26.92 per gross ton.

PITTSBURGH—No. 1 heavy melting steel was off $1.00 again this week. The new top price of $30.00 for this grade represented a decline of $4.00 within the last month. Indications were that the market would continue weak for the remainder of the year. Judicious buying by consumers was having its effect. There was some speculation, however, that prices have reached the point of discouragement for collectors, thus raising the possibility that this source of scrap might tend to dry up.

CHICAGO—Continued weakness prevailed here on all items. Little scrap is moving even at the lower prices. Railroad prices fell further on some grades. Dealers expect little activity before January and some are laying off part of their help. One mill which bought No. 1 factory bundles a few months ago found that some of the bundles were not up to standard. An investigation is under way to determine where the shipments came from. Most of the trade expect the mills to renew their interest in scrap early next year. As yet the mills are not certain they will start buying even then.

PHILADELPHIA—The market was quiet here, but small tonnages of No. 2 and bundles were placed. The bundles price was down $1.50 from the previous quotation, but there was no change in the No. 2 price. Some low phos business was placed at currently quoted prices. Market factors are inclined now to be bearish, although it is expected that there will be some buying soon by one mill that has been out of the market for 6 months or more. The cast market is not as strong as it has been and yard cast is down $1.00. The malleable price is quoted $3.00 higher.

NEW YORK—The market here is very quiet and expectations are that it will remain so for the remainder of the year. Material is still being moved on old commitments and shipments on new orders are expected to be held up until after the first of the year. Yard material is being received in fair quantities due to the good weather. The cast grades are dull with very little of this material being moved at present.

DETROIT—The market here is quiet this week and prices appear to be leveling off. In the absence of mill and dealer buying most scrap sources anticipate little activity here before the beginning of the new year. The tone of the market is on the soft side and this is reflected in slightly lower prices for blast furnace and cast iron grades quoted here this week.

CLEVELAND—A confirmed sale of representative tonnages of No. 1 and No. 2 heavy melting steel at $31.00 and $29.00 respectively to a major consumer in the Valley accelerated the downward spiral of scrap prices in this district this week. The market is weak and inconsistent. Because of the large tonnages overhanging the market, scrap prices have been tumbling while steelmaking operations have been soaring to capacity. On the other hand, railroad lists are expected to bring more than quoted prices. Dealer grades are weak and are expected to remain so until some time in February, when a buying movement is likely to get under way.

BOSTON—Although trading here is fairly active, prices are off again this week. This marks the fourth week of the present downtrend. No. 1 steel is off $1.00, and the range is now $18.50 to $19.00. The trade is satisfied with the present activity and does not seem to be concerned with the fact that some prices are now down $3.50 from their peak of a month ago. The cast market is dull with practically no trading.

BUFFALO—Leading mill consumers were successful in efforts to lower steelmaking scrap prices as sales running to approximately 20,000 tons were reported at a price decline of $1.50. On the basis of the new sales No. 1 heavy melting dropped to $28.00-$28.50 while No. 2 and related items were down to $26.00-$26.50. While dealers had been holding out for previous prices, on the basis of the increase in steel prices, business took place at the lower values as material began backing up at dealers' yards. Dealers reported receipts heavy. The movement is aided by mild weather. A number of dealers participated in the new contract. Turnings, excluded in previous transactions by the leading mill doing the buying, were included in the latest sales.

CINCINNATI—Prices weakened sympathetically here this week following sales at reduced prices in nearby districts. Consumers in this district appear to have their requirements for the next 5 or 6 weeks presaging a quiet market until late January. Demand for turnings and the foundry grades is at low ebb at the moment.

ST. LOUIS—Buying scrap iron by mills in the St. Louis industrial district continues at a slow pace due to heavy buying previously and the Christmas holidays. It is not expected that there will be a renewal of buying until about the middle of January. Shipments from the country have been good due to open weather and better prices.

BIRMINGHAM—Openhearth grades of steel have dropped $2.00 in this market. Demand for these grades is very weak and supplies available are plentiful. Demand for cast grades remains strong with little No. 1 cupola cast to be found.

UNIVERSITY OF MICHIGAN LIBRARIES

Scrap IRON & STEEL Prices

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$29.50 to $30.00
No. 2 hvy. melting	26.50 to 27.00
No. 1 bundles	29.50 to 30.00
No. 2 bundles	24.50 to 25.00
Machine shop turn.	21.50 to 22.00
Mixed bor. and ms. turns.	21.50 to 22.00
Shoveling turnings	25.50 to 26.00
Cast iron borings	24.50 to 25.00
Low phos. plate	33.50 to 34.00
Heavy turnings	25.00 to 26.00
No. 1 RR. hvy. melting	32.50 to 33.00
Scrap rails, random lgth.	36.00 to 37.00
Rails 2 ft and under	40.00 to 41.00
RR. steel wheels	34.50 to 35.50
RR. spring steel	34.50 to 35.50
RR. couplers and knuckles	34.50 to 35.50
No. 1 machinery cast.	38.00 to 39.00
Mixed yard cast.	35.00 to 36.00
Heavy breakable cast.	29.00 to 30.00
Malleable	33.00 to 34.00

Chicago

No 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 factory bundles	25.00 to 26.00
No. 1 dealers' bundles	23.00 to 24.00
No. 2 dealers' bundles	21.00 to 22.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	17.00 to 18.00
Low phos. forge crops	31.00 to 32.00
Low phos. plate	29.00 to 30.00
No. 1 RR. hvy. melting	29.00 to 30.00
Scrap rails, random lgth.	35.00 to 36.00
Rerolling rails	37.00 to 38.00
Rails 2 ft and under	38.00 to 39.00
Locomotive tires, cut	32.00 to 33.00
Cut bolsters & side frames	31.00 to 32.00
Angles and splice bars	31.00 to 32.00
RR. steel car axles	37.00 to 38.00
No. 3 steel wheels	32.00 to 33.00
RR. couples and knuckles	32.00 to 33.00
No. 1 machinery cast.	38.00 to 39.00
No. 1 agricul. cast.	37.00 to 38.00
Heavy breakable cast.	32.00 to 33.00
RR. grate bars	26.00 to 27.00
Cast iron brake shoes	30.00 to 31.00
Cast iron car wheels	34.00 to 35.00
Malleable	36.00 to 37.00

Philadelphia

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	22.50 to 23.50
No. 1 bundles	24.00 to 25.00
No. 2 bundles	19.00 to 20.00
Machine shop turn.	16.50 to 17.50
Mixed bor. and turn.	14.50 to 15.50
Shoveling turnings	17.50 to 18.50
Low phos. punchings, plate	27.50 to 28.50
Low phos. 5 ft and under	26.00 to 27.00
Low phos. bundles	26.00 to 27.00
Hvy. axle forge turn.	24.00 to 25.00
Clean cast chem. borings	28.00 to 29.00
RR. steel wheels	29.00 to 29.50
RR. spring steel	29.00 to 29.50
Rails 18 in. and under	38.00 to 40.00
No. 1 machinery cast.	37.00 to 39.00
Mixed yard cast.	34.00 to 35.00
Heavy breakable cast.	34.00 to 35.00
Cast iron carwheels	37.00 to 38.00
Malleable	39.00 to 40.00

Cleveland

No. 1 hvy. melting	$28.00 to $28.50
No. 2 hvy. melting	26.00 to 26.50
No. 1 busheling	28.00 to 28.50
No. 1 bundles	28.00 to 28.50
No. 2 bundles	23.50 to 24.00
Machine shop turn.	18.00 to 18.50
Mixed bor. and turn.	19.50 to 20.00
Shoveling turnings	19.50 to 20.00
Cast iron borings	19.50 to 20.00
Low phos. 2 ft and under	29.00 to 29.50
Steel axle turn.	27.00 to 27.50
Drop forge flashings	28.00 to 28.50
No. 1 RR. hvy. melting	30.00 to 30.50
Rails 3 ft and under	43.00 to 44.00
Rails 18 in. and under	45.00 to 46.00
No. 1 machinery cast.	43.00 to 44.00
RR. cast	43.00 to 44.00
RR. grate bars	30.00 to 31.00
Stove plate	34.00 to 35.00
Malleable	38.00 to 39.00

Youngstown

No. 1 hvy. melting	$30.50 to $31.00
No. 2 hvy. melting	28.50 to 29.00
No. 1 bundles	30.50 to 31.00
No. 2 bundles	$25.50 to $26.00
Machine shop turn.	20.50 to 21.00
Shoveling turnings	22.00 to 22.50
Cast iron borings	22.00 to 22.50
Low phos. plate	31.50 to 32.00

Buffalo

No. 1 hvy. melting	$28.00 to $28.50
No. 2 hvy. melting	26.00 to 26.50
No. 1 busheling	26.00 to 26.50
No. 1 bundles	27.00 to 27.50
No. 2 bundles	24.50 to 25.00
Machine shop turn.	18.50 to 19.00
Mixed bor. and turn.	19.50 to 20.00
Shoveling turnings	19.50 to 20.00
Cast iron borings	19.50 to 20.00
Low phos. plate	29.50 to 30.00
Scrap rails, random lgth.	33.50 to 34.00
Rails 2 ft and under	39.50 to 40.00
RR. steel wheels	35.00 to 36.00
RR. spring steel	35.00 to 36.00
RR. couplers and knuckles	35.00 to 36.00
No. 1 cupola cast.	36.00 to 36.50
Mixed yard cast.	35.00 to 35.50
Stove plate	33.50 to 34.00
Small indus. malleable	30.00 to 30.50

Birmingham

No. 1 hvy. melting	$25.00
No. 2 hvy. melting	24.00
No. 2 bundles	22.00
No. 1 busheling	24.00
Machine shop turn.	$16.00 to 17.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	18.00
Bar crops and plate	30.00 to 31.00
Structural and plate	30.00 to 31.00
No. 1 RR. hvy. melt.	26.00 to 27.00
Scrap rails, random lgth.	30.00 to 31.00
Rerolling rails	36.00 to 37.00
Rails 2 ft and under	35.50 to 36.00
Angles & splice bars	35.00 to 36.00
Std. steel axles	28.00 to 29.00
No. 1 cupola cast.	35.00 to 36.00
Stove plate	28.00 to 29.00
Cast iron carwheels	28.00 to 29.00

St. Louis

No. 1 hvy. melting	$30.50 to $31.50
No. 2 hvy. melting	26.50 to 27.00
No. 2 bundled sheets	26.50 to 27.00
Machine shop turn.	16.00 to 17.00
Shoveling turnings	21.00 to 22.00
Rails, random lengths	34.00 to 35.00
Rails 3 ft and under	37.00 to 38.00
Locomotive tires, uncut	28.00 to 30.00
Angles and splice bars	35.00 to 36.00
Std. steel car axles	40.00 to 42.00
RR. spring steel	31.00 to 32.00
No. 1 machinery cast.	36.00 to 37.00
Hvy. breakable cast.	30.00 to 31.00
Cast iron brake shoes	30.00 to 31.00
Stove plate	31.00 to 32.00
Cast iron car wheels	34.00 to 35.00
Malleable	28.00 to 30.00

New York

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$20.00 to $20.50
No. 2 hvy. melting	18.50 to 19.00
No. 2 bundles	17.50 to 18.00
Machine shop turn.	10.50 to 11.50
Mixed bor. and turn.	10.50 to 11.50
Shoveling turnings	11.50 to 12.50
Clean cast chem. bor.	23.00 to 24.00
No. 1 machinery cast.	29.00 to 30.00
Mixed yard cast.	27.00 to 28.00
Charging box cast.	27.00 to 28.00
Heavy breakable cast.	27.00 to 28.00
Unstrp. motor blocks	22.00 to 23.00

Boston

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$18.50 to $19.00
No. 2 hvy. melting	16.00 to 16.50
No. 1 bundles	18.50 to 19.00
No. 2 bundles	$15.00 to $15.50
Machine shop turn.	10.50 to 11.00
Mixed bor. and turn.	10.50 to 11.00
Shoveling turnings	12.50 to 13.00
No. 1 busheling	17.50 to 18.00
Clean cast chem. borings	18.50 to 19.00
No. 1 machinery cast.	32.00 to 34.00
No. 2 machinery cast.	28.00 to 29.00
Heavy breakable cast.	25.00 to 26.00
Stove plate	25.00 to 26.00

Detroit

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 bundles	26.00 to 27.00
New busheling	25.00 to 26.00
Flashings	24.00 to 25.00
Machine shop turn.	15.00 to 15.50
Mixed bor. and turn.	15.00 to 15.50
Shoveling turnings	16.50 to 17.00
Cast iron borings	16.50 to 17.00
Low phos. plate	26.00 to 27.00
No. 1 cupola cast	35.00 to 36.00
Heavy breakable cast.	28.00 to 29.00
Stove plate	27.00 to 28.00
Automotive cast	35.00 to 36.00

Cincinnati

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$26.00 to $26.50
No. 2 hvy. melting	23.50 to 24.00
No. 1 bundles	26.00 to 26.50
No. 2 bundles	21.50 to 22.00
Machine shop turn.	13.50 to 14.00
Mixed bor. and turn.	16.50 to 17.00
Shoveling turnings	16.50 to 17.00
Cast iron borings	16.50 to 17.00
Low phos. 18 in. under	33.00 to 34.00
Rails, random lengths	34.00 to 35.00
Rails, 18 in. and under	42.00 to 43.00
No. 1 cupola cast	39.00 to 40.00
Hvy. breakable cast	32.00 to 33.00
Drop broken cast	42.00 to 43.00

San Francisco

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Machine shop turn	9.00
Elec. fur. 1 ft and under	28.00
No. 1 RR. hvy. melting	20.00
Scrap rails, random lgth.	20.00
No. 1 cupola cast.	$30.00 to 35.00

Los Angeles

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Mach. shop turn.	12.00
Elec. fur. 1 ft and under	30.00
No. 1 RR. hvy. melting	20.00
No. 1 cupola cast.	$35.00 to 38.00

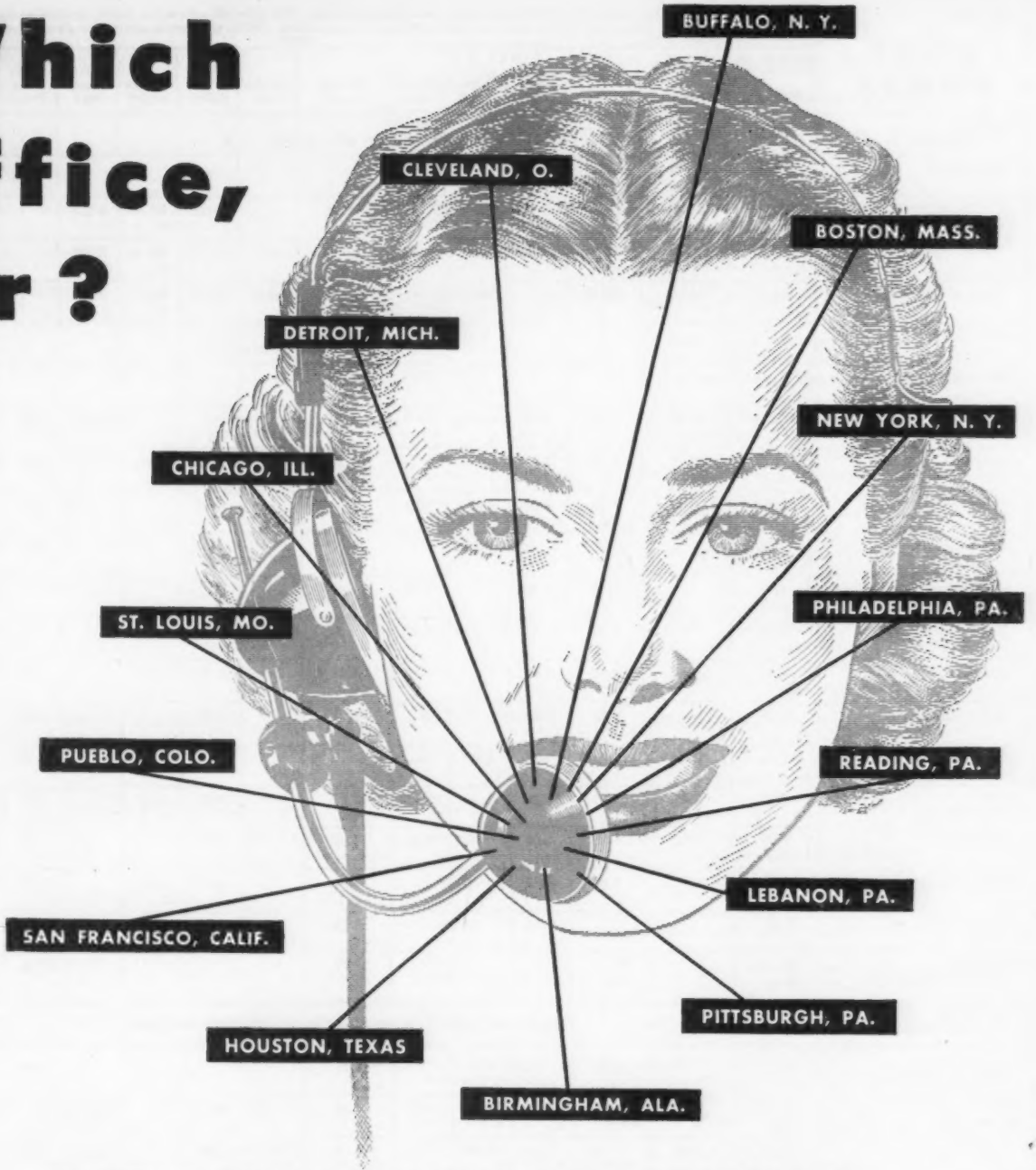
Seattle

No. 1 hvy. melting	$18.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	12.00
Elec. fur. 1 ft. and under	$25.00 to 28.00
RR. hvy. melting	19.00
No. 1 cupola cast	30.00
Heavy breakable cast.	20.00

Hamilton, Ont.

No. 1 hvy. melting	$24.00
No. 1 bundles	16.00
No. 2 bundles	16.00
Mechanical bundles	22.00
Mixed steel scrap	20.00
Mixed bor. and turn.	18.00
Rails, remelting	24.00
Rails, rerolling	27.00
Bushelings	18.50
Bush., new fact, prep'd	22.00
Bush., new fact, unprep'd	17.00
Short steel turnings	18.00
Cast scrap	$40.00 to 43.00

Which office, sir?



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The expansion of our organization, with offices located in 15 major cities, is in accordance with our policy to give better service to our customers.

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

UNIVERSITY OF MICHIGAN LIBRARIES

IRON AGE

STEEL PRICES

Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page.
Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

	Pittsburgh	Chicago	Gary	Cleveland	Canton Massillon	Middletown	Youngstown	Bethlehem	Buffalo	Conshohocken	Johnstown	Sparrows Point	Granite City	Detroit
INGOTS Carbon forging, net ton	$50.00 1			➤	SEE NOTE AT RIGHT				◄					$50.00 31
Alloy net ton	$51.00 1.17													$51.00 31
BILLETS, BLOOMS, SLABS Carbon, rerolling net ton	$52.00 1	$52.00 1	$52.00 1				$57.00 13		$52.00 3	$57.00 26	$52.00 3			
Carbon forging billets, net ton	$61.00 1	$61.00 1.4	$61.00 1.8	$61.00 4			$61.00 25		$61.00 3.4	$63.00 26	$61.00 3			$61.00 31
Alloy, net ton	$63.00 1.17	$63.00 1.4	$63.00 1		$63.00 4.42		$63.00 13	$63.00 3	$63.00 3.4	$65.00 26	$63.00 3			$63.00 31
SHEET BARS							$57.00 13							
PIPE SKELP	3.25 1.5						3.25 1.4							
WIRE RODS	3.40 2.18	3.40 2.4.33	3.40 6	3.40 2			3.40 6				3.40 3	3.50 3		
SHEETS Hot-rolled (18 ga. & hvr.)	3.25 1.5.9.15	3.25 23	3.25 1.6.8	3.25 4.5			3.25 1.4.6.13		3.25 3	3.35 26		3.25 3		3.45 12
Cold-rolled	4.00[1.5] 7.9.15.63		4.00 1.6.8	4.00 4.5		4.00 7	4.00 4.6		4.00 3			4.00 3	4.20 22	4.20 12
Galvanized (10 gage)	4.40 1.9.15		4.40 1.8		4.40 4		4.40[64] 5.65[44]					4.40 3		
Enameling (12 gage)	4.40 1		4.40 1.8	4.40 4		4.40 7	4.40[6] 4.90[76]						4.60 22	4.70 12
Long terne (10 gage)	4.80 9.15		4.80 1			4.80 7								
Hi Str. low alloy, h.r.	4.95 1.5.9	4.95 1	4.95 1.6.8	4.95 4.5			4.95 1.4.6.13		4.95 3	4.95 26		4.95 3		5.15 12
Hi Str. low alloy, c.r.	6.05 1.5		6.05 1.6.8	6.05 4.5			6.05 4.6.13		6.05 3			6.05 3		6.25 12
Hi Str. low alloy, galv.	6.75 1			6.75 4	6.75 4							6.75 3		
STRIP Hot-rolled (over 6 in.)	3.25 5.7.9.28	3.25 23.66	3.25 1.6.8	3.25 5			3.25 1.4.6.13		3.25 3	3.35 26		3.25 3		3.45 13.47
Cold-rolled	4.00 5.7.9.63	4.15 66	4.00 8	4.00 2.5		4.00 7	4.00 4.6.13.40.48.49		4.00 3			4.00 8		4.20[12.47] 4.25[48.81]
Hi Str. low alloy, h.r.	4.95 5		4.95 1.6.8	4.95 5			4.95 1.4.6.13		4.95	4.95 26		4.95 3		5.15 13
Hi Str. low alloy, c.r.	6.05 5.9			6.05 2.5			6.05 4.6.13		6.05 3			6.05 3		6.25 13
TINPLATE† Cokes, 1.50-lb. base box	$7.75 1.5.9.15		$7.75 1.6.8				$7.75 4					$7.85 3	$7.95 22	
Electrolytic 0.25, 0.50, 0.75 lb box	Deduct $1.30, $1.05 and 75¢ respectively from 1.50-lb coke base box price													
BLACKPLATE, 29 gage Hollowware enameling	5.30 1.5.15		5.30 1.6.8				5.30 4					5.40 3	5.50 22	
BARS Carbon steel	3.35 1.5.9.17	3.35 1.4.23	3.35 1.6.8	3.35 4	3.35 4		3.35 1.4.6		3.35 3.4		3.35 3			3.55 12
Reinforcing‡	3.35 1.5	3.35 4	3.35 1.6.8	3.35 4	3.35 4		3.35 1.4.6		3.35 3.4		3.35 3	3.35 3		
Cold-finished	3.95[5] 4.00[2.4] 17.52.69.71	4.00[3] 23.69.70	4.00 4.73.74	4.00 2.61	4.00 4.33		4.00 6.40.57		4.00 70					4.30 12
Alloy, hot-rolled	3.75 1.17	3.75 1.4.23	3.75 1.6.8		3.75 4.42		3.75 1.6.25	3.75 3	3.75 3.4		3.75 3			4.05 12
Alloy- cold-drawn	4.65 2.17.52.69.71	4.65 2.23.69.70	4.65 4.73.74	4.65 2.61	4.65 4.42.63		4.65 6.25.57	4.65 3	4.65 3.70					
Hi Str. alloy, h.r.	5.10 1.5		5.10 1.6.8	5.10 4			5.10 1.6	5.10 3	5.10 3		5.10 3			5.30 12
PLATE Carbon Steel	3.40 1.5	3.40 1	3.40 1.6.8	3.40 4			3.40 13		3.40 3	3.50 26	3.40 3	3.40 3		3.65 3
Floor plates	4.55 1	4.55 1	4.55 3	4.55 5						4.55 26				
Alloy	4.40 1	4.40 1	4.40 1				4.40 13			4.40 26	4.40 3	4.40 3		
Hi St. low alloy	5.20 1.5	5.20 1	5.20 1.8	5.20 4.5			5.20 6			5.20 26	5.20 3	5.20 3		5.45 12
SHAPES, Structural	3.25 1.5.9	3.25 1.23	3.25 1.6.8					3.30 3	3.30 3		3.30 3			
Hi Str. low alloy	4.95 1.5	4.95 1	4.95 1.6.8				4.95 6	5.05 3	5.05 3		5.05 3			
MANUFACTURERS' WIRE Bright	4.15 2.5.15	4.15[3] 4.33.34		4.15 2.77			4.15 6				4.15 3	4.25	Duluth = 4.15[3] Pueblo = 4.50[14]	
PILING, Steel sheet	4.05 1.9	4.05 1							4.05 3					

STEEL PRICES

Smaller numbers indicate producing companies. See key at right. Prices are in cents per lb unless otherwise noted. Extras apply.

Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana		
					INGOTS Carbon forging, net ton
	$59.00 83				Alloy, net ton
		$52.00 11	F=$71.00[19]		BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton
	$89.00 83	$61.00 11	F=$80.00[19]	Geneva=$61.00[16]	Carbon forging billets, net ton
	$71.00 83		F=$82.00[19]		Alloy net ton
				Mansfield=$58.00 G. T.[75] Portsmouth=$55.00[20]	SHEET BARS
					PIPE SKELP
	3.95 83		SF, LA=4.05[24] LA=4.20[62]	Portsmouth=3.40[20] Worcester=3.70[3]	WIRE RODS
		3.25 4.11	LA=3.95[24] F=4.15[19]	Kokomo,[30] Ashland[7]=3.25 Niles=3.75[76]	SHEETS Hot-rolled (18 ga. & hvr.)
		4.00 11	SF=4.95[24] F=4.90[19]		Cold-rolled
		4.40 4.11	SF, LA=5.15[24]	Ashland=4.40[7] Kokomo=4.80[30]	Galvanized (10 gage)
					Enameling (12 gage)
					Long ternes (10 gage)
		4.95 11			Hi Str. low alloy, h.r.
					Hi Str. low alloy, c.r.
					Hi Str. low alloy, galv.
3.85 83	3.85 83	3.25 11	SF, LA=4.00[62] F=4.40[19], S=4.25[62]	Ashland=3.25[7] Atlanta=3.40[85]	STRIP Hot-rolled
			F=4.90[19] LA=5.00[27]	New Haven=4.50[2,68]	Cold-rolled
		4.95 11			Hi Str. low alloy, h.r.
			F=6.85[19]		Hi Str. low alloy, c.r.
		$7.85 11	SF=$8.50[24]		TINPLATE Cokes, 1.50-lb. base box
Deduct $1.30, $1.05 and 75¢ respectively from 1.50-lb coke base box price					Electrolytic 0.25, 0.50, 0.75 lb box
					BLACKPLATE, 29 gage Hollowware enameling
3.95 83	3.75 83	3.35 4.11	SF, LA=4.05[24] LA=4.05[62]	Atlanta=3.50[85]	BARS Carbon steel
3.95 83	3.75 83	3.35 4.11	SF, S=4.10[62] F=4.00[19]	Atlanta=3.50[85]	Reinforcing‡
				Putnam, Newark=4.40[69] Cumberland=3.95[72]	Cold-finished
4.35 83			LA=4.80[62] F=4.75[19]		Alloy, hot-rolled
				Newark,[69] Worcester[2]=4.95	Alloy, cold-drawn
		5.10 4			Hi Str. low alloy, h.r.
	3.80 83	3.40 4.11	F=4.00[19] S=4.30[62] Geneva=3.40[16]	Claymont=3.50[29] Coatesville=3.50[31] Harrisburg=3.75[35]	PLATE Carbon steel
				Harrisburg=4.55[35]	Floor plates
				Coatesville=4.50[71]	Alloy
		5.20 11		Geneva=5.20[16]	Hi Str. low alloy
3.85 83	3.85 83	3.25 11	SF=3.80[62] LA=3.85,[62] 3.95[24]	Phoenixville=3.30[66]	SHAPES, Structural
		4.95 11	F=3.80[19] S=3.90[62]		Hi Str. low alloy
4.75 83	4.55 83	4.15 4.11	SF, LA=5.10[24] LA=5.10[62]	Portsmouth=4.15[20] Worcester=4.45[2]	MANUFACTURERS' WIRE Bright

Notes: †Special coated mfg ternes, deduct $1.10 from 1.50-lb coke base box price. Can-making quality blackplate, 55 to 128-lb, deduct $2.00 from 1.50-lb coke base box. ‡Straight lengths only from producer to fabricator.

Prices on these pages are those in effect prior to Dec. 16, when U. S. Steel prices were advanced. Price changes start on p. 88.

KEY TO STEEL PRODUCERS

With Principal Offices

1 Carnegie-Illinois Steel Corp., Pittsburgh
2 American Steel & Wire Co., Cleveland
3. Bethlehem Steel Co., Bethlehem
4 Republic Steel Corp., Cleveland
5 Jones & Laughlin Steel Corp., Pittsburgh
6 Youngstown Sheet & Tube Co., Youngstown
7 Armco Steel Corp., Middletown, Ohio
8 Inland Steel Co., Chicago
9 Weirton Steel Co., Weirton, W. Va.
10 National Tube Co., Pittsburgh
11 Tennessee Coal, Iron & R. R. Co., Birmingham
12 Great Lakes Steel Corp., Detroit
13 Sharon Steel Corp., Sharon, Pa.
14 Colorado Fuel & Iron Corp., Denver
15 Wheeling Steel Corp., Wheeling, W. Va.
16 Geneva Steel Co., Salt Lake City
17 Crucible Steel Co. of America, New York
18 Pittsburgh Steel Co., Pittsburgh
19 Kaiser Co., Inc., Oakland, Calif.
20 Portsmouth Steel Corp., Portsmouth, Ohio.
21 Lukens Steel Co., Coatsville, Pa.
22 Granite City Steel Co., Granite City, Ill.
23 Wisconsin Steel Co., South Chicago, Ill.
24 Columbia Steel Co., San Francisco
25 Copperweld Steel Co., Glassport, Pa.
26 Alan Wood Steel Co., Conshohocken, Pa.
27 Calif. Cold Rolled Steel Corp., Los Angeles
28 Allegheny Ludlum Steel Corp., Pittsburgh
29 Worth Steel Co., Claymont, Del.
30 Continental Steel Corp., Kokomo, Ind.
31 Rotary Electric Steel Co., Detroit
32 Laclede Steel Co., St. Louis
33 Northwestern Steel & Wire Co., Sterling, Ill.
34 Keystone Steel & Wire Co., Peoria, Ill.
35 Central Iron & Steel Co., Harrisburg, Pa.
36 Carpenter Steel Co., Reading, Pa.
37 Eastern Stainless Steel Corp., Baltimore
38 Washington Steel Corp., Washington, Pa.
39 Jessop Steel Co., Washington, Pa.
40 Blair Strip Steel Co., New Castle, Pa.
41 Superior Steel Corp., Carnegie, Pa.
42 Timken Steel & Tube Div., Canton, Ohio
43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
44 Reeves Steel & Mfg. Co., Dover, Ohio
45 John A. Roebling's Sons Co., Trenton, N. J.
46 Simonds Saw & Steel Co., Fitchburg, Mass.
47 McLouth Steel Corp., Detroit
48 Cold Metal Products Co., Youngstown
49 Thomas Steel Co., Warren, Ohio
50 Wilson Steel & Wire Co., Chicago
51 Sweet's Steel Co., Williamsport, Pa.
52 Superior Drawn Steel Co., Monaca, Pa.
53 A. M. Byers Co., Pittsburgh
54 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
55 Ingersoll Steel Div., Chicago
56 Phoenix Iron & Steel Co., Phoenixville, Pa.
57 Fitzsimons Steel Co., Youngstown
58 Stanley Works, New Britain, Conn.
59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
60 Vanadium-Alloys Steel Co., Latrobe, Pa.
61 Cuyahoga Steel & Wire Co., Cleveland
62 Bethlehem Pacific Coast Steel Corp., San Francisco
63 Follansbee Steel Corp., Pittsburgh
64 Niles Rolling Mill Co., Niles, Ohio
65 Atlantic Steel Co., Atlanta
66 Acme Steel Co., Chicago
67 Joslyn Mfg. & Supply Co., Chicago
68 Detroit Steel Corp., Detroit
69 Wyckoff Steel Co., Pittsburgh
70 Bliss & Laughlin, Inc., Harvey, Ill.
71 Columbia Steel & Shafting Co., Pittsburgh
72 Cumberland Steel Co., Cumberland, Md.
73 La Salle Steel Co., Chicago
74 Monarch Steel Co., Inc., Indianapolis
75 Empire Steel Co., Mansfield, Ohio
76 Mahoning Valley Steel Co., Niles, Ohio
77 Oliver Iron & Steel Co., Pittsburgh
78 Pittsburgh Screw & Bolt Co., Pittsburgh
79 Standard Forgings Corp., Chicago
80 Driver Harris Co., Harrison, N. J.
81 Detroit Tube & Steel Div., Detroit
82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
83 Sheffield Steel Corp., Kansas City

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base Column	Pittsburg, Calif.
Standard & coated nails*	103	122
Woven wire fence†	109	132
Fence posts, carloads††	112	...
Single loop bale ties	106	130
Galvanized barbed wire**	123	143
Twisted barbless wire	123	...

* Pgh., Chi., Duluth; Worcester, 6 columns higher; Houston, 8 columns higher; Kansas City, 12 columns higher. † 15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth, Joliet and Johnstown.

	Base per 100 lb	Pittsburg, Calif.
Annealed fence wire‡	$4.80	$5.75
Annealed, galv. fencing‡	5.25	6.20
Cut nails, carloads‡‡	6.75	...

‡ Add 30¢ at Worcester; 10¢ at Sparrows Pt.
‡‡ Less 20¢ to jobbers.

PRODUCING POINTS — *Standard, Coated or galvanized nails, woven wire fence, bale ties, and barbed wire:* Alabama City, Ala., 4; Atlanta, 65; Aliquippa, Pa. (except bale ties), 5; Bartonville, Ill. (except bale ties), 34; Chicago, 4; Donora, Pa., 2; Duluth, 2; Fairfield, Ala., 11; Johnstown, Pa. (except bale ties), 3; Joliet, Ill., 2; Kokomo, Ind., 30; Minnequa, Colo., 14; Monessen, Pa. (except bale ties), 18; Pittsburg, Calif., 24; Portsmouth, Ohio, 20; Rankin, Pa. (except bale ties), 2; Sparrows Point (except woven fence), 3; Sterling, Ill., 33; San Francisco (except nails and woven fence), 14; Torrance, Calif. (nails only), 24; Worcester (nails only), 2; Houston (except bale ties), 83; Kansas City (except bale ties), 83.

Fence posts: Duluth, 2; Johnstown, Pa., 3; Joliet, Ill., 2; Minnequa, Colo., 14; Moline, Ill., 4; Williamsport, Pa., 51.

Cut nails: Wheeling, W. Va., 15; Conshohocken, Pa., 26.

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

Stainless-carbon	Plate	Sheet
No. 304, 20 pct,		
Coatesville, Pa. (21)	*26.50	
Washgtn, Pa. (39)	*26.50	
Claymont, Del. (29)	*26.50	
Conshohocken, Pa. (26)		*22.50
New Castle, Ind. (55)	*26.50	*24.00
Nickel-carbon 10 pct, Coatesville, (26)	27.50	
Inconel-carbon 10 pct, Coatesville, (21)	36.00	
Monel-carbon 10 pct, Coatesville, (21)	29.00	
No. 302 Stainless-copper-stainless, Carnegie, Pa. (41)		75.00
Aluminized steel sheets, hot dip, Butler, Pa., (7)		7.75

* Includes annealing and pickling, or sandblasting.

ELECTRICAL SHEETS

24 gage, HR cut lengths, f.o.b. mill

	Cents per lb
Armature	*5.45
Electrical	*5.95
Motor	6.70
Dynamo	7.50
Transformer 72	8.05
Transformer 65	8.60
Transformer 58	9.30
Transformer 52	10.10

PRODUCING POINTS—Beech Bottom, W. Va., 18; Brackenridge, Pa., 28; Follansbee, W. Va., 63, add 1.75¢; Granite City, Ill., 22; Indiana Harbor, Ind., 8; Mansfield, Ohio, 75; Niles, Ohio, 64, 76,* add 0.50¢; Vandergrift, Pa. 1; Warren, Ohio, 4; Zanesville, Ohio, 7.

Prices here are those in effect prior to Dec. 16, when U. S. Steel prices were advanced. For advances announced prior to press time see items beginning on p. 88.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago) Base discount less case lots

Machine and Carriage Bolts

	Pct Off List
½ in. & smaller x 6 in. & shorter	35
9/16 & ⅝ in. x 6 in. & shorter	37
¾ in. & larger x 6 in. shorter	34
All diam., longer than 6 in.	30
Lag, all diam over 6 in. & longer	35
Lag, all diam x 6 in. & shorter	37
Plow bolts	47

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	35
9/16 to 1 in. inclusive	34
1⅛ to 1½ in. inclusive	32
1⅝ in. and larger	27

On above bolts and nuts, excepting plow bolts, additional allowances of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifinished Hexagon Nuts

	USS	SAE
7/16 in. and smaller	...	41
½ in. and smaller	38	...
½ in. through 1 in.	...	39
9/16 in. through 1 in.	37	...
1⅛ in. through 1½ in.	35	37
1⅝ in. and larger	28	...

In full case lots, 15 pct additional discount.

Stove Bolts

Packages, nuts separate	$61.75
In bulk	70.00

Large Rivets

(½ in. and larger)

	Base per 100 lb
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$6.75
F.o.b. Lebanon, Pa.	6.75

Small Rivets

(7/16 in. and smaller)

	Pct off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	48

Cap and Set Screws

(In packages)	Pct Off List
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright	46
¾ to 1 in. x 6 in., SAE (1035), heat treated	35
Milled studs	19
Flat head cap screws, listed sizes	5
Fillister head cap, listed sizes	28

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.00¢
0.41 to 0.60 carbon	5.50¢
0.61 to 0.80 carbon	6.10¢
0.81 to 1.05 carbon	8.05¢
1.06 to 1.35 carbon	10.35¢

Worcester, add 0.30¢.

LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports)

	Per gross ton
Old range, bessemer	$7.60
Old range, nonbessemer	7.45
Mesabi, bessemer	7.35
Mesabi, nonbessemer	7.20
High phosphorus	7.20

After Dec. 31, 1948, increases or decreases in Upper Lake freight, dock and handling charges and taxes thereon to be for the buyers' account.

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb	$3.20
Joint bars, per 100 lb	4.25
Light rails per 100 lb	3.55

	Base Price cents per lb
Track spikes†	5.35
Axles	5.20
Screw spikes	8.00
Tie plates	4.05
Tie plates, Pittsburgh, Torr., Calif.*	4.20
Track bolts, untreated	8.25
Track bolts, heat treated, to railroads	8.50

* Seattle, add 30¢.
† Kansas City, 5.60¢.

PRODUCING POINTS—*Standard rails:* Bessemer, Pa., 1; Ensley, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Minnequa, Colo., 14; Steelton, Pa., 3.

Light rails: All the above except Indiana Harbor and Steelton, plus Fairfield, Ala., 11; Johnstown, Pa. 3; Minnequa, Colo., 14.

Joint bars: Bessemer, Pa., 1; Fairfield, Ala., 11; Indiana Harbor, Ind., 8; Joliet, Ill., 1; Lackawanna, N. Y., 3; Steelton, Pa., 3; Minnequa, Colo., 14.

Track spikes: Fairfield, Ala., 11; Indiana Harbor, Ind., 6, 8; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 5; Chicago, 4; Struthers, Ohio, 6; Youngstown, 4.

Track bolts: Fairfield, Ala., 11; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 77, 78.

Axles: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 79; Johnstown, Pa., 3; McKees Rocks, Pa., 1.

Tie plates: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Pittsburgh, Calif., 24; Pittsburgh, 4; Seattle, 62; Steelton, Pa., 3; Torrance, Calif., 24; Minnequa, Colo., 14.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	90.5¢
18	4	1	—	5	$1.42
18	4	2	—	—	$1.025
1.5	4	1.5	8	—	65¢
6	4	2	6	—	69.5¢

High-carbon-chromium	53¢
Oil hardened manganese	29¢
Special carbon	26.5¢
Extra carbon	22¢
Regular carbon	19¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$13.50 to $14.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$15.50 to $16.00
Foundry, oven coke	
Buffalo, del'd	$20.90
Chicago, f.o.b.	20.40
Detroit, f.o.b.	19.40
New England, del'd	22.70
Seaboard, N. J., f.o.b.	22.00
Philadelphia, f.o.b.	20.45
Swedeland, Pa., f.o.b.	20.40
Plainesville, Ohio, f.o.b.	20.90
Erie, del'd	$20.25 to 21.04
Cleveland, del'd	22.62
Cincinnati, del'd	21.71
St. Paul, f.o.b.	23.50
St. Louis, del'd	21.60
Birmingham, del'd	18.75

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill. Base price, per ton net: Effective CaF, content:

70% or more	$37.00
60% or less	34.00

UNIVERSITY OF MICHIGAN LIBRARIES

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	12.75	13.50	15.00	14.50	22.75	18.25	20.00	11.25	13.75	11.50
Slabs, billets, rerolling	17.00	18.25	20.25	19.25	30.25	24.50	26.75	15.00	18.50	15.25
Forg. discs, die blocks, rings	30.50	30.50	33.00	32.00	49.00	38.50	41.00	24.50	25.00	25.00
Billets, forging	24.25	24.25	28.25	25.50	39.00	29.00	32.75	19.50	20.00	20.00
Bars, wire, structurals	28.50	28.50	31.00	30.00	46.00	34.00	38.50	23.00	23.50	23.50
Plates	32.00	32.00	34.00	34.00	50.50	39.50	44.00	26.00	26.50-27.00	26.50
Sheets	37.50	37.50	39.50	39.50	53.00	45.50	50.00	33.00	33.50	35.50
Strip, hot-rolled	24.25	25.75	30.00	27.75	46.00	34.50	38.75	21.25	28.00	21.75
Strip, cold-rolled	30.50	33.00	38.50	35.00	55.00	44.50	48.50	27.00	33.50	27.50

Numbers correspond to producers. See Key on Steel Price Page.

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38, 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Lockport, N. Y., 46.

Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38; W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 49; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, 13; Butler, Pa., 7.

Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1, 67; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42.

Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Chicago, 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28.

Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44.

Plates: Brackenridge, Pa., 28; Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

Forged discs, die blocks, rings: Pittsburgh, 1, 17; Syracuse, 17; Ferndale, Mich., 28.

Forging billets: Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1.

REFRACTORIES (*F.o.b. works*)

Fire Clay Brick *Carloads, Per 1000*

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5) $80.00
No. 1 Ohio 74.00
Sec. quality, Pa., Md., Ky., Mo., Ill. . 74.00
No. 2 Ohio 66.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50) 11.50

Silica Brick

Mt. Union, Pa., Ensley, Ala. $80.00
Childs, Pa. 84.00
Hays, Pa. 85.00
Chicago District 89.00
Western, Utah and Calif. 95.00
Super Duty, Hays, Pa., Athens, Tex. ..... $85.00 to 95.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) .. $13.75 to 14.00
Silica cement, net ton, bulk, Hays, Pa. 16.00
Silica cement, net ton, bulk, Ensley, Ala. 15.00
Silica cement, net ton, bulk, Chicago District ..... $14.75 to 15.00
Silica cement, net ton, bulk, Utah and Calif. 21.00

Chrome Brick *Per Net Ton*

Standard chemically bonded, balt., Chester $69.00

Magnesite Brick

Standard, Baltimore $91.00
Chemically bonded, Baltimore 80.00

Grain Magnesite *Std. 3/4-in. grains*

Domestic, f.o.b. Baltimore, in bulk, fines removed .. $56.00 to $56.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines ..... 30.50 to 31.00
in sacks with fines ..... 35.00 to 35.50

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk, Midwest, add 10¢; Missouri Valley, add 20¢ ... $12.25

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags ... 7.4¢ to 9.0¢
Domestic sponge iron, 98+% Fe, carload lots ..... 9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe ..... 31.5¢ to 39.5¢
Electrolytic iron unannealed, minus 325 mesh, 99+% Fe 48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe .. 63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.8+% Fe 90.0¢ to $1.75
Aluminum ..... 29.00¢
Antimony ..... 45.78¢
Brass, 10 ton lots ..... 22.75¢ to 25.75¢
Copper, electrolytic ..... 28.625¢
Copper, reduced ..... 28.50¢
Cadmium $2.40
Chromium, electrolytic, 99% min. $3.50
Lead ..... 19.02¢
Manganese ..... 55.00¢
Molybdenum, 99% $2.65
Nickel, unannealed ..... 61.00¢
Nickel, spherical, minus 30 mesh, unannealed ..... 68.00¢
Silicon ..... 34.00¢
Solder powder ..... 8.5¢ plus metal cost
Stainless steel, 302 ..... 75.00¢
Tin ..... 96.00¢
Tungsten, 99% $2.90
Zinc, 10 ton lots ..... 15.50¢ to 18.25¢

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb
	GRAPHITE	
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2½	24, 30	21.00¢
2	24, 30	23.00¢
	CARBON	
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
17 to 20	84, 90	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢

PIPE AND TUBING

Base discounts, f.o.b. mills
Base price, about $200.00 per net ton
Not reflecting Natl. Tube Co. advance Dec. 16. See p. 87.

Standard, T & C

Steel, buttweld*	Black	Galv
⅛-in.	43 to 41	26½ to 24½
¼-in.	46 to 44	30½ to 28½
⅜-in.	48½ to 46½	33½ to 31½
1-in.	49 to 47	34 to 32
1¼-in.	49½ to 47½	34½ to 32½
1½-in.	50 to 48	35 to 33
2-in.	50½ to 48½	35½ to 33½
2½ to 3-in.		
Steel, lapweld		
2-in.	39½	26 to 24
2½ to 3-in.	43½ to 42½	28 to 27
3½ to 6-in.	46½ to 42½	31 to 27
Steel, seamless		
2-in.	38½	23
2½ to 3-in.	41½	26
3½ to 6-in.	43½	28
Wrought Iron, buttweld		
⅛-in.	+28½	+47
¼-in.	+10½	+36
⅜ & 1¼ in.	+ 4½	+27
2-in.	— 1½	+23½
3-in.	— 2	+23
Wrought Iron, lapweld		
2-in.	+ 7½	+31
2½ to 3½-in.	+ 5	+26½
4-in.	list	+20½
4½ to 8-in.	+ 2	+22

Extra Strong, Plain Ends

Steel, buttweld		
⅛-in.	42 to 40	27 to 25
¼-in.	46 to 44	31 to 29
⅜-in.	48 to 46	34 to 32
1-in.	48½ to 46½	34½ to 32½
1¼-in.	49 to 47	35 to 33
1½-in.	49½ to 47½	35½ to 34½
2-in.	50 to 48	36 to 34
2½ to 3-in.		
Steel, lapweld		
2-in.	39½ to 38½	25 to 24
2½ to 3-in.	44½ to 42½	30 to 28
3½ to 6-in.	48 to 44	33½ to 31½
Steel, seamless		
2-in.	37½	23
2½ to 3-in.	41½	27
3½ to 6-in.	45	30½
Wrought Iron, buttweld		
⅛-in.	+16	+40
¼-in.	+ 9½	+34
1 to 2-in.	— ½	+23
Wrought Iron, lapweld		
2-in.	+ 4½	+27½
2½ to 4-in.	— 5	+16
4½ to 6-in.	— 1	+20½

For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct.
*Fontana, Calif., deduct 11 points from figures in left columns.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut length 4 to 24 ft inclusive.

OD in in.	Gage BWG	Seamless H.R.	Seamless C.R.	Electric Weld H.R.	Electric Weld C.D.
2	13	$19.18	$22.56	$18.60	$21.89
2½	12	25.79	30.33	25.02	29.41
3	12	28.68	33.76	27.82	32.74
3½	11	35.85	42.20	34.78	40.94
4	10	44.51	52.35	43.17	50.78

CAST IRON WATER PIPE

Per net ton

6 to 20-in., del'd Chicago $95.70
6 to 24-in., del'd N. Y. ..... $92.50 to 97.40
6 to 24-in., Birmingham 82.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less 109.30

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb. (Metropolitan area delivery, add 15c to base price except Cincinnati and New Orleans (*), add 10c; New York, Chicago and Boston, add 20c).

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Baltimore	5.31	6.21–6.41	6.95–7.11	5.37	....	5.56	5.36	5.42	6.16	....	9.60–10.10	....	....
Birmingham	4.85	5.75	6.15	4.85	....	5.10	4.90	4.90	6.59	....	....	....	....
Boston	5.55	6.45–6.75	7.11–7.61	5.60	6.75	5.75	5.42	5.52	6.02	9.36–9.67	9.67–9.87	10.72	11.02
Buffalo	4.85	5.75	7.42–7.57	5.24	7.27	5.35	5.00	4.95	5.40	9.30	9.60	10.65	10.95
Chicago	4.85	5.75	6.85	4.85	5.45–6.15	5.10	4.90	4.90	5.40	8.90	9.20	10.25	10.55
Cincinnati*	5.16–5.51	5.84–6.28	6.59–6.93	5.28–5.43	....	5.53–5.85	5.33	5.33–5.48	6.08–6.20	9.74	9.99	11.19	11.44
Cleveland	4.85	5.75	6.70	5.03	....	5.21	5.01	5.01	5.45	9.05	9.35	10.40	10.70
Detroit	5.28–5.32	6.07–6.18	7.38–7.58	5.27–5.47	6.27–6.58	5.52–5.57	5.33–5.40	5.33–5.55	6.00–6.10	9.67	9.92	11.11	11.36
Houston	6.70	....	7.30	6.70	....	6.70	6.20	6.40–6.70	7.60	10.45	10.40	11.45	11.70
Indianapolis	6.95 5.29	6.13	7.44	5.29	7.36	5.54	6.65 5.34	5.34	6.14	11.25	11.39	....	....
Kansas City	5.50	6.40	7.50	5.50	6.95[5]	5.75	5.55	5.55	6.10	5.55	9.85	10.90	11.20
Los Angeles	5.45[17]	7.00	7.40[17]	5.95[17]	7.35[17]	5.50[17]	5.45[17]	5.60[17]	7.25[6]	9.55[21]	9.75[21]	10.95[21]	11.35[21]
Memphis	5.75	6.60	7.20	5.80–5.95	6.80	5.95–6.00	5.75	5.75	6.53	....	....	....	....
Milwaukee	5.03	5.93	7.02	5.03–5.38	6.32	5.28	5.08	5.08	5.63	9.08	9.38	10.43	10.73
New Orleans*	5.95	6.75	....	6.15	....	6.15	5.95	5.95	6.65[6]	....	....	....	....
New York	5.40	6.31	6.85–6.90	5.62	6.76	5.65	5.33	5.57	6.31	9.28	9.58	10.83	10.93
Norfolk	6.00	....	....	6.20	..	6.05	6.05	6.05	7.05	....	....	....	....
Omaha	6.13	....	8.33	6.13	....	6.38	6.18	6.18	6.98	....	....	....	....
Philadelphia	4.95	6.24[13]	6.63	5.40	6.29	5.35	5.10	5.40	5.98	9.05	9.35	10.62	10.87
Pittsburgh	4.85	5.75	6.90	5.00	6.00	5.05	4.90	4.90	5.40	8.90	9.20	10.25	10.55
Portland	6.50[8]	8.00	8.80–9.10	6.85[8]	....	6.30[8]	6.35[8]	8.35[8]	8.25[14]	10.50[6]	10.10[6]	....	....
Salt Lake City	7.05	7.05	8.65–8.65	7.45[3]	....	5.65[3]	5.50[3]	7.10[8]	8.15	....	....	....	....
San Francisco	6.15[8]	7.50[2]	7.80	6.75[8]	8.25[5]	6.35[8]	5.90[8]	5.90[8]	7.55	9.80	10.00	11.20	11.60
Seattle	6.70[4]	8.15[2]	8.80	6.70[4]	....	6.35[4]	6.30[4]	6.20[4]	8.15[14]	....	10.35[15]	....	13.10[1]
St. Louis	7.10 5.22–5.37	8.65 6.12–6.27	9.30 7.32	5.22	6.68–7.54	5.47	5.27	5.27	5.82	9.27–9.72	9.57–9.97	10.62–11.17	10.92–11.42
St. Paul	5.44	6.19–6.34	7.54–7.64	5.44	6.82	5.64–6.69	5.49	5.49	6.04	9.49	9.79	10.84	11.14

BASE QUANTITIES *Standard unless otherwise keyed on prices.*

Hot-Rolled:
Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

Cold-Rolled:
Sheets, 400 to 1499 lb strip, extras on all quantities. Bars 1000 lb and over.

Alloy Bars:
1000 to 1999 lb.

Galvanized Sheets:
450 to 1499 lb.

Exceptions:
(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 500 to 1999 lb; (10) 500 to 999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over; (17) up to 1999 lb; (18) 1000 to 1499 lb; (19) 1500 to 3499 lb; (20) 6000 lb and over; (21) 2000 to 3999 lb.

PIG IRON PRICES

Dollars per gross ton. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES

Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	48.50	49.90	49.50	....
Birmingham	38.88	39.38	....	....	....
Buffalo	46.00	46.50	47.00	....	....
Chicago	46.00	46.50	46.50	47.00	....
Cleveland	46.00	46.50	46.50	47.00	51.00
Duluth	46.00	46.50	46.50	47.00	....
Erie	46.00	46.50	46.50	47.00	....
Everett	....	50.50	51.00	....	....
Granite City	47.90	48.40	48.90	....	....
Ironton, Utah	46.00	46.50	....	....	....
Pittsburgh	46.00	46.50	46.50	47.00	....
Geneva, Utah	46.00	46.50	....	....	....
Sharpsville	46.00	46.50	46.50	47.00	....
Steelton	46.00	46.50	49.00	49.50	54.00
Struthers, Ohio	46.00	....	....	....	....
Swedeland	46.00	46.50	49.00	49.50	....
Toledo	46.00	46.50	46.50	47.00	....
Troy, N. Y.	48.00	48.50	49.00	....	54.00
Youngstown	46.00	46.50	46.50	47.00	....

DELIVERED PRICES (BASE GRADES)

Consuming Point	Producing Point	Rail Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	50.50	51.00	.....	.....
Boston	Steelton	6.90	.....	.....	.....	.....	60.90
Brooklyn	Bethlehem	4.29	.....	52.79	53.29	53.79	.....
Cincinnati	Birmingham	6.70	45.58	46.08	.....	.....	.....
Jersey City	Bethlehem	2.63	.....	51.13	51.63	52.13	.....
Los Angeles	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Mansfield	Cleveland-Toledo	3.33	49.33	49.83	49.83	50.33	54.33
Philadelphia	Bethlehem	2.39	50.39	50.89	51.39	51.89	.....
Philadelphia	Swedeland	1.44	49.44	49.94	50.44	50.94	.....
Philadelphia	Steelton	3.09	.....	.....	.....	.....	57.09
Rochester	Buffalo	2.63	48.63	49.13	49.63	.....	.....
San Francisco	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Seattle	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....
Syracuse	Buffalo	3.58	49.58	50.08	50.58	.....	.....

Producing point prices are subject to switching charges; silicon differential (not to exceed 50c per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 38c per ton for phosphorus content of 0.70 pct and over manganese differentials, a charge not to exceed 50c per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.01 to 6.50 pct. C/L per g.t., f.o.b. Jackson, Ohio—$59.50; f.o.b. Buffalo, $60.75. Add $1.00 per ton for each additional 0.50 pct Si up to 17 pct. Add 50c per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus $60.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, $68.56. High phosphorus charcoal pig iron is not being produced.

UNIVERSITY OF MICHIGAN LIBRARIES

FERROALLOYS

Ferromanganese

78-82% Mn, maximum contact base price, gross ton, lump size.

F.o.b. Birmingham	$174
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont.	$172
F.o.b. Johnstown, Pa.	$174
F.o.b. Sheridan, Pa.	$172
F.o.b. Etna, Clairton, Pa.	$175

$2.00 for each 1% above 82% Mn, penalty, $2.15 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.45
Ton lots	12.05
Less ton lots	12.95

Spiegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$64.00	$65.00
Pgh. or Chicago	65.00	66.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, packed	35.5
Ton lots	37.0

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, delivered.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	25.25	27.10	28.30
0.10% max. C	24.75	26.60	27.80
0.15% max. C	24.25	26.10	27.30
0.30% max. C	23.75	25.60	26.80
0.50% max. C	23.25	25.10	26.30
0.75% max. C, 7.00% max. Si	20.25	22.10	23.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	8.95
Ton lots	10.60
Briquet, contract basis carlots, bulk delivered, per lb of briquet	10.30
Ton lots	11.90
Less ton lots	12.80

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $77.00 gross ton, freight allowed to normal trade area; Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $73.50. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	20.70
97% Si, 1% Fe	21.10

Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 1 lb Si briquets.

Carload, bulk	6.30
Ton lots	7.90
Less ton lots	8.80

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size, bulk, in carloads, delivered.

25% Si	17.00
50% Si	11.30
75% Si	13.50
85% Si	14.65
90-95% Si	16.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Si)

0.06% C	28.75
0.10% C	28.25
0.15% C	28.00
0.20% C	27.75
0.50% C	27.50
1.00% C	27.25
2.00% C	27.00
65-69% Cr, 4-9% C	30.50
62-66% Cr, 4-6% C, 6-9% Si	31.35

Briquets — Contract price, cents per pound of briquet, delivered, 60% chromium.

Carload bulk	13.75
Ton lots	15.25
Less ton lots	16.15

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% max. C	$1.09
0.50% max. C	1.05
9.00% min. C	1.04

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	17.00¢
Ton lots to carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of alloy, delivered. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Other Ferroalloys

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y. Carload	7.40¢
Ton lots	8.30¢
Calcium molybdate, 45-50%, f.o.b. Langeloth, Pa., per pound contained Mo.	96¢
Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb. Ton lots	$2.90
Less ton lots	2.95
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.	$1.10
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton	$65.00
10 tons to less carload	75.00
Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.28
Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.40
Less ton lots	1.45
Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, carloads per net ton	$160.00
Ferrotungsten, standard, lump or ¾ x down, packed, per pound contained W, 5 ton lots, delivered	$2.25
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V. Openhearth	$2.90
Crucible	3.00
High speed steel (Primos)	3.10
Molybdenum oxide briquets, f.o.b. Langeloth, Pa.; bags, f.o.b. Wash., Pa., per lb contained Mo.	95¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound Carload, bulk, lump	11.00¢
Ton lots, bulk, lump	11.50¢
Ton lots, packed, lump	11.75¢
Less ton lots, lump	12.25¢
Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound contained V_2O_5	$1.20
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy. Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk	6.60¢

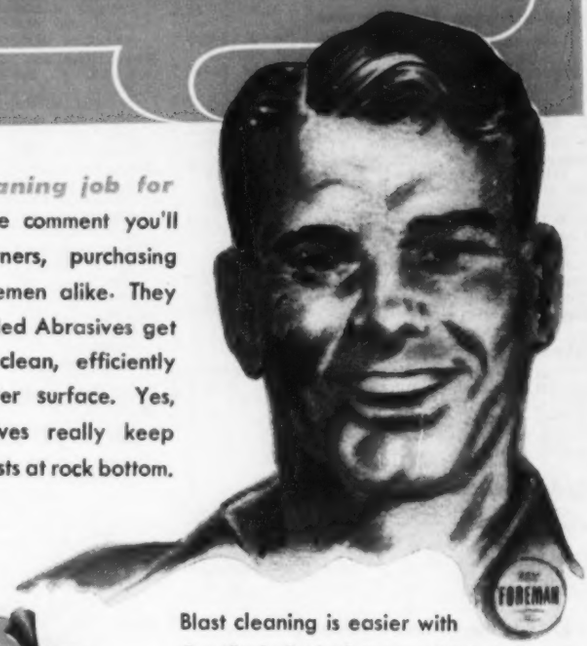
Boron Agents

Contract prices, per lb of alloy, del.

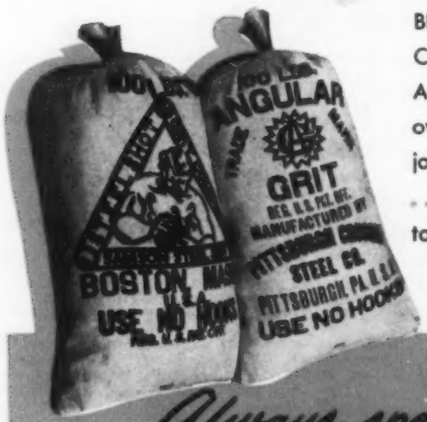
Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	$4.25
Bortam, f.o.b. Niagara Falls Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b. Suspension Bridge, N. Y.; freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%. Ton lots, per pound	8.625¢
Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots	$1.20
F.o.b. Wash., Pa.; 100 lb and over 10 to 14% B.	.75
14 to 19% B.	1.20
19% min. B.	1.50
Grainal, f.o.b. Bridgeville, Pa. freight allowed, 100 lb and over. No. 1	93¢
No. 6	63¢
No. 79	45¢
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered. Ton lots	$1.67
Less ton lots	1.79
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered. Less ton lots	$1.80
Silcaz, contract basis, delivered Ton lots	45.00¢

"CERTIFIED"

does a better cleaning job for us



A better cleaning job for us . . . that's the comment you'll hear from owners, purchasing agents and foremen alike. They all agree, Certified Abrasives get castings really clean, efficiently produce a better surface. Yes, Certified Abrasives really keep blast cleaning costs at rock bottom.



Blast cleaning is easier with Certified. Both Samson Shot and Angular Grit can be used over and over again. With them on your job you get *more work done . . . every day.* Order Certified today for better cleaning!

Always specify "Certified"

ACCEPTED AND USED FOR OVER 55 YEARS.

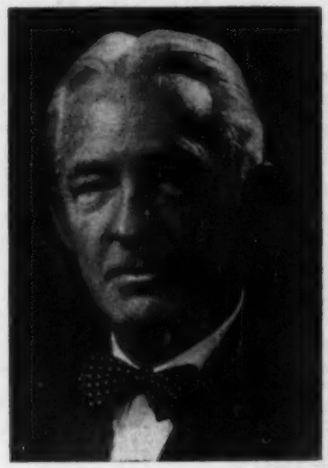
PITTSBURGH CRUSHED STEEL CO.
PITTSBURGH, PA

STEEL SHOT AND GRIT CO.
BOSTON, MASS.

Iron Age Introduces

Continued from Page 23

S. W. Rolph, executive vice-president, has been named president effective Jan. 1950, of the ELECTRIC STORAGE BATTERY CO., Philadelphia to succeed **R. C. Norberg**, who has been elected chairman of the board of directors.



HAROLD B. SCHOTT, director of sales promotion, Brown & Sharpe Mfg. Co.

Harold B. Schott has been appointed director of sales promotion of the BROWN & SHARPE MFG. CO., Providence, R. I. Mr. Schott was formerly in charge of sales of the Pump Div.

F. R. Valpey, vice-president in charge of sales, STANDARD PRODUCTS CO., has been elected a director of the company and **R. E. McIntyre** has been elected financial vice-president. Mr. Valpey joined the company in 1940 and Mr. McIntyre has been assocated with the company since 1941.

Marion S. Guilliams formerly of the industrial relations department at the Fisher body St. Louis plant, has been appointed resident director of industrial relations at the Fisher Body Kansas City plant of GENERAL MOTORS CORP., Detroit. **O. W. Young** has retired as executive assistant to the general manager. Mr. Young will become Buick's dealer at Tucson, Ariz. **George R. Childress**,

UNIVERSITY OF MICHIGAN LIBRARIES

"8 years of trouble-free operation with GULF HARMONY OIL"

says this foreman

"no overhauls or oil changes necessary on this press during that period"

"During eight years of operation we've never found it necessary to overhaul this straightening press for any reason," says the Foreman of a Midwestern manufacturing plant. "Periodic checks have revealed little or no leakage through oil seals, a complete absence of oil sludge in valves, lines, and sump, and a minimum of wear in all moving parts.

"We know this record wouldn't have been possible without a hydraulic fluid of the caliber of Gulf Harmony Oil. The fact that we have never found it necessary to replace the original charge is ample evidence that it doesn't form sludge, and the absence of mechanical trouble during the entire eight years indicates that this oil has excellent lubricating qualities."

A typical case of the satisfaction expressed by users of Gulf Harmony Oil, which is establishing performance records in the hydraulic systems of hundreds of presses, machine tools, and other types of metalworking equipment. High resistance to oxidation, an effective corrosion inhibitor, and Gulf's patented anti-foam agent are a few of the reasons for its fine performance.

Call in a Gulf Lubrication Engineer today and ask him to recommend the proper grade of this quality oil for your hydraulic machines. It can help you improve equipment performance and reduce maintenance costs. Write, wire or phone your nearest Gulf office.

Gulf Oil Corporation · Gulf Refining Company

Offices in Principal Cities in 30 States

GULF INDUSTRIAL LUBRICATION

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Aircomatic welding process Ups production of home heater units 71%... cuts manufacturing costs

THE STEWART-WARNER CORPORATION, South Wind Division, Indianapolis, Indiana, had a problem joining the upper and lower halves of its "Safe-Air Gas Home Heater". Established methods—bolting, or conventional arc welding were inadequate for today's production demands.

D. P. Carey, Airco Technical Sales Representative, was called in. He suggested the completely new, high speed, inert gas-shielded metal arc method of welding stainless steels, aluminum and other hard-to-weld metals . . . the Aircomatic Process. Two heaters were shipped to the Airco laboratory for test welding. The test was 100% successful, and the company immediately ordered Aircomatic equipment and put it to work on a production-line basis.

As a result, former production of 7 units per hour has been increased to 12 units per hour . . . with an accompanying reduction in production costs.

If you want more information about Airco's Aircomatic Welding Process, write your nearest Airco office for copies of forms ADR-53 and ADC-661.

TECHNICAL SALES SERVICE—ANOTHER AIRCO PLUS-VALUE FOR CUSTOMERS

Ask your nearest Airco office about this "Plus-Value" Service today. (In Texas: Magnolia Airco Gas Products Company . . . On West Coast: Air Reduction Pacific Company.)

AIRCO **AIR REDUCTION**

Offices in Principal Cities

Headquarters for Oxygen, Acetylene and Other Gases... Calcium Carbide... Gas Cutting Machines... Gas Welding Apparatus and Supplies... Arc Welders, Electrodes and Accessories

IRON AGE INTRODUCES

Continued

assistant Manager of the Puick Atlanta zone, will go to Tucson with Young as general manager of the company. **Fred Little** has been appointed paymaster of GMC Truck & Coach Division.

EDWIN R. JUNG, general sales manager, Clark Controller Co.

Edwin R. Jung has been appointed general sales manager of the CLARK CONTROLLER CO., Cleveland. Mr. Jung has been with the company for 22 years, serving in sales capacities in various areas, and was for many years Atlantic Coast regional manager.

Howard F. Roderick will become general sales manager Jan. 1 of the Michigan Alkali Div. of WYANDOTTE CHEMICALS CORP. Mr. Roderick has been research director since 1936.

OBITUARIES

Thomas E. Bond, retired president of the Elgin, Joliet and Eastern Railroad, New York, subsidiary of United States Steel, died Dec. 9.

Harold B. Harvey, 64, founder and president of the Harvey Metal Corp., Chicago, died Dec. 3.

Roland G. E. Ullman, 61, founder and president of the Roland G. E. Ullman Organization, Inc., Philadelphia, died Dec. 1.

Resume Your Reading on Page 24

FREE

PUBLICATIONS

Continued from Page 34

terweight and the drive are described in 4-p. illustrated catalog. *Jeffrey Mfg. Co. For more information, check No.* 12 *on the postcard.*

Bi-Metal Thermostats

The Stevens type R bi-metal strip thermostats for use in appliances, industrial apparatus and electrical equipment are described in 2-p. sheet. Illustrations, schematic diagrams, response curves, and cutaway construction views are included. *Stevens Mfg. Co. For more information, check No.* 13 *on the postcard on p.* 35.

Industrial Vacuums

The Spencer line of industrial vacuums and 132 applications, such as conveying chemical powders, powering pneumatic chucks, paint plant air cleaning and exhausting welding fumes, are illustrated in 20-p. brochure. *Spencer Turbine Co. For more information, check No.* 14 *on the postcard on p.* 35.

Axle Assemblies

The line of Caravan axles assemblies and component parts are described in 12-p. catalog. *United Mfg. Co. For more information, check No.* 15 *on the postcard on p.* 35.

Fluid Drives

New 28-p. catalog and engineering data book features the Link-Belt fluid drive, power transmission units. *Link-Belt Co. For more information, check No.* 16 *on the postcard on p.* 35.

Production Facilities

The manufacturing and assembling facilities of South Wind are offered to industry in new 20-p. brochure. *Stewart-Warner Corp. For more information, check No.* 17 *on the postcard on p.* 35.

Resume Your Reading on Page 35

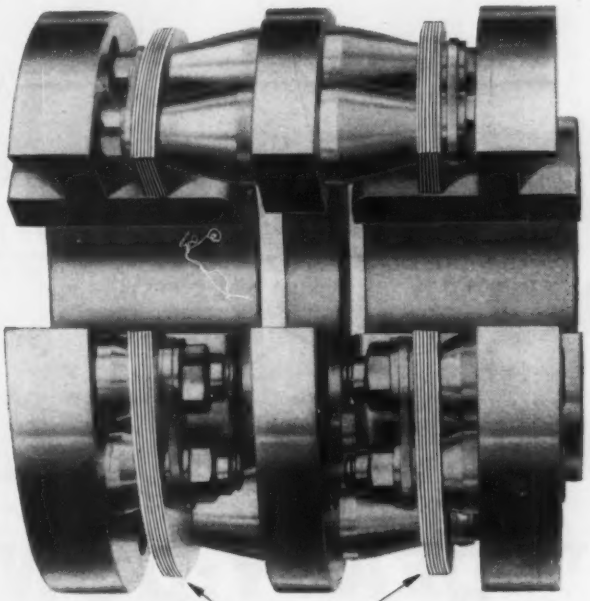
THOMAS *Flexible* ALL METAL COUPLINGS

FOR POWER TRANSMISSION • REQUIRE NO MAINTENANCE

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

Thomas Couplings have a wide range of speeds, horsepower and shaft sizes: ½ to 40,000 HP — 1 to 30,000 RPM.

Specialists on Couplings for more than 30 years



PATENTED FLEXIBLE DISC RINGS

BACKLASH FRICTION WEAR and CROSS-PULL are eliminated LUBRICATION IS NOT REQUIRED!

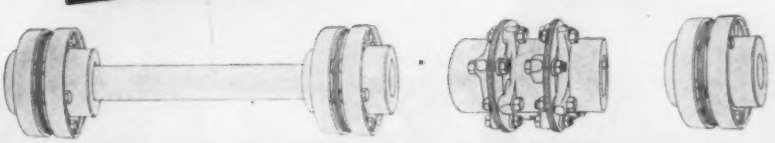
THE THOMAS PRINCIPLE GUARANTEES PERFECT BALANCE UNDER ALL CONDITIONS OF MISALIGNMENT.

• • •

NO MAINTENANCE PROBLEMS.

• • •

ALL PARTS ARE SOLIDLY BOLTED TOGETHER.



Write for the latest reprint of our Engineering Catalog.

THOMAS FLEXIBLE COUPLING CO.
WARREN, PENNSYLVANIA

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Ready-Power-equipped Yale Truck, stacking automobile parts.

power unlimited

WITH READY-POWER

There's a world of power in Ready-Power-equipped electric trucks and it's yours in any amounts needed to handle your jobs with utmost efficiency. Ready-Power gas-electric Units generate dependable electric current, in unlimited amounts, right on the truck chassis. Keep them working as many hours as you want. They won't slow down. Equip any make truck with Ready-Power.

Ready-Power-equipped electric truck spotting a Fruehauf Trailer.

THE READY-POWER CO.

3822 GRAND RIVER AVE., DETROIT 8, MICHIGAN

NEW

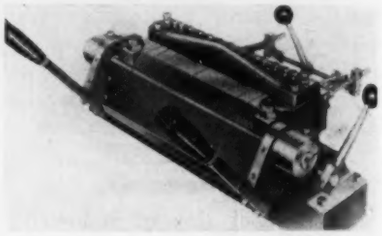
PRODUCTION IDEAS

Continued from Page 38

desired working height. Accessibility, convenience and safety in operation are other advantages of the press. *Bunell Machine & Tool Co. For more information, check No. 31 on the postcard on p. 35.*

Precision Box Fingers

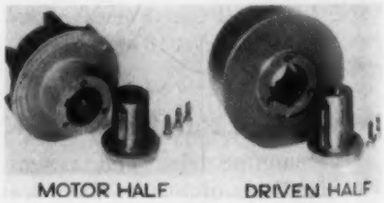
By using the Di-Acro box finger bar in place of the solid top bar, all Di Acro brakes can be quickly converted to a precision box and pan brake. Box fingers can be quickly



adjusted for any size box within their capacity in graduations of ⅛ in. The fingers are hardened, precision ground and accurately mounted against a machined surface in a sturdy alloy casting that provides extreme rigidity over its entire length. An open end finger makes it possible to form triangular, square and rectangular tubes. *O'Neil-Irwin Mfg. Co. For more information, check No. 32 on the postcard on p. 35.*

Clutch Coupling

Accommodating shafts from ¾ to 1¾ in. diam in 1/16 in. increments with standard keys, the new Rawson clutch coupling is adjustable right on the job for vari-

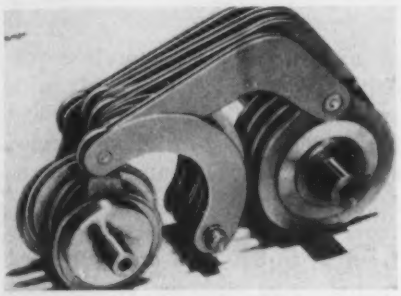


ous hp requirements. The coupling consists of two sections—a motor half and a driven half. The split taper bushing wedges the tapered

coupling hub tightly to the shaft, assuring a perfect fit to the shaft. These are complete packaged units ready for use with motors from 0.43 hp at 580 rpm to 25.7 hp at 1800 rpm. *Centric Clutch Co. For more information, check No.* 33 *on the postcard on p.* 35.

Torque Converter

The operating principle of a new speed control device, the Zero-Max torque converter involves the use of crank motion on the input shaft creating linear motion that is absorbed on the output shaft by a series of one way overriding clutches. A leverage mechanism is placed between the two shaft struc-



tures for infinitely varying the length of the stroke from zero to maximum providing an infinite speed variation from zero to 4:1 ratio. The Zero-Max is compact, can be mounted in any position, and provides level flow of power. Change of speed can be made while operating or stopped. The smallest unit handles loads up to 10 in-lb output torque. *Revco, Inc. For more information, check No.* 34 *on the postcard on p.* 35.

Hardening Equipment

Equipment for the continuous, r-f selective induction hardening of cylindrical parts at feed rates to 6

ips, consists of three major components: an automatic loading device, a horizontal rotating scanner, and an industrial radio-frequency

May we assist you, sir?

If you're on a merry-go-round about handling air or gas, *R-C dual-ability* can help you.

That's been our exclusive job for almost a century. We've developed the most extensive line of blowers, exhausters and gas pumps in the industry, with capacities from 5 cfm to 100,000 cfm.

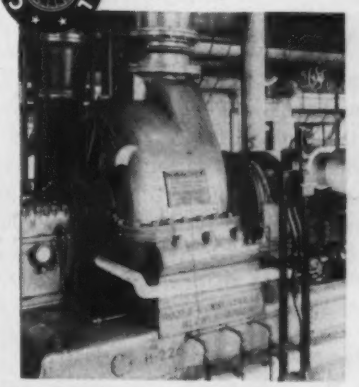
We're the only builders offering that *dual choice* of both Centrifugal and Rotary Positive equipment. Thus, without bias, we can suggest units that meet most closely the requirements of the work to be done.

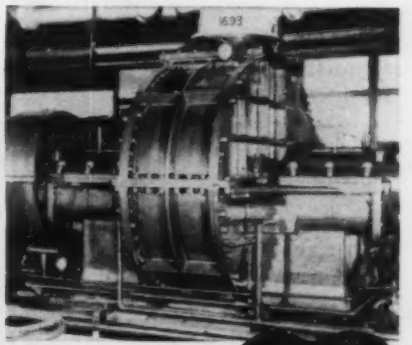
For new installations or replacements, look to us for your needs. Alert engineering teams up with modern construction to insure long-time, satisfactory performance of R-C equipment.

ROOTS-CONNERSVILLE BLOWER CORPORATION
912 Ohio Avenue, Connersville, Indiana

CENTRIFUGAL

Type H, 2-stage Centrifugal Exhauster for coke oven plant. Capacity 16,850 cfm.





ROTARY

Type RCGH Rotary Positive Gas Pump with capacity of 20,600 cfm in steel plant service. Driven by 450-hp synchronous motor.

ROOTS-CONNERSVILLE

BLOWER BUILDERS R-C SINCE 1854

ONE OF THE DRESSER INDUSTRIES

CHECK the Soil
CHECK the Metal
MAIL the List

OAKITE PRODUCTS, INC.
30H Thames St., N. Y. 6, N. Y.

Tell me (without obligation) about Oakite methods for removing soils checked below:

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- ☐ pigmented drawing compounds
- ☐ oils and greases
- ☐ heat scale
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- ☐ carbon smuts
- ☐ flux residues
- ☐ rust preventives
- ☐ other soils: .....

Metals to be cleaned: .....

NAME .....

COMPANY .....

ADDRESS .....

If you haven't been getting satisfactory removal of certain soils, let us show what we can do. There is an effective Oakite method for every metal-cleaning job.

Cleaning in tanks
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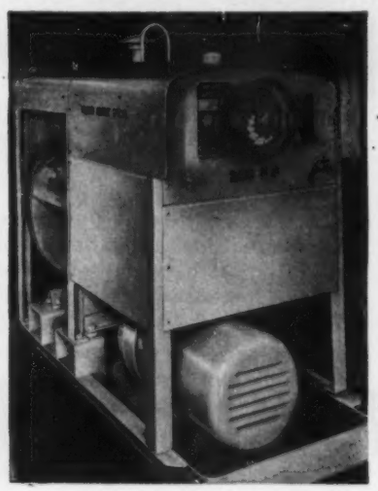
OAKITE
MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in Principal Cities of United States and Canada

generator. The loader, consisting of a magazine and hopper, feeds the workpieces to the scanner through a feeder unit. The equipment hardens by passing the work through an inductor coil and spray quench ring. Uniformity of case depth is obtained by controlled feeds; concentricity of case is assured by positive guide and rotation of the cylindrical workpiece about its longitudinal axis. *Westinghouse Electric Corp. For more information, check No.* 35 *on the postcard on p.* 35.

Special Arc Welder

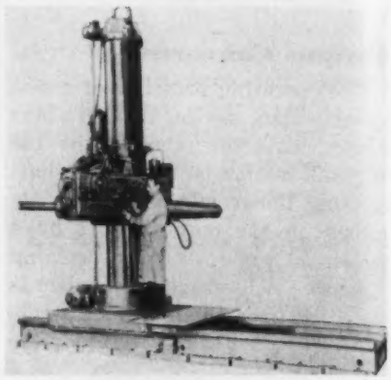
The 200 amp Hornet Special arc welder combines the compact 36A generator with a four-cylinder, 31 hp air-cooled Wisconsin engine. The



generator has a welding range from 40 amp at 20 v to 250 amp at 40 v and is built as a two-bearing unit. The control wheel mounted on the panel shows accurate current markings and the hand wheel has five positions. The 36A is a self-excited generator with excitation of the main field supplied by an auxiliary brush. The Wisconsin engine has magneto ignition with impulse starting. *Air Reduction Sales Co. For more information, check No.* 36 *on the postcard on p.* 35.

Heavy Duty Machine

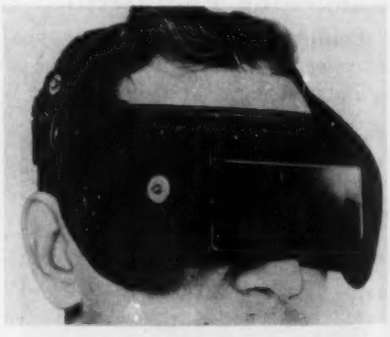
Boring, drilling, tapping, reaming and spotfacing operations can be performed on a new heavy duty horizontal drilling and tapping machine with a spread of 10 to 20 hp for handling a wide range of sizes on production or job shop work. The head swivels 45° up and down from the horizontal position and the 22-in. diam column swivels 360° to increase flexibility and versatility and to eliminate the need for pit construction, trunnions and special holding fixtures. It can be used



as a stationary fixed-location machine or as a portable unit with spreader arms, leveling jacks and lifting bail. A 4-in. diam nitrided spindle has 36-in. manual and power feed and a No. 5 or No. 6 Morse taper hole. Three speeds range from 25 to 300 rpm and four feed ranges give spindle feeds from 0.0035 to 0.125 ipr. *Kaukana Machine Corp. For more information, check No.* 37 *on the postcard on p.* 35.

Gas Welding Mask

Unobstructed vision features an improved mask for gas welding, cutting, and brazing. It may be worn over prescription glasses. Headgear and cross strap are made of extruded plastic, are moisture proof, will not shrink or warp, and may be thoroughly sterilized. The



mask is adjustable in circumference and height to give exact and lasting fit. *General Scientific Equipment Co. For more information, check No*Y 38 *on the postcard on p.* 35.

Resume Your Reading on Page 39

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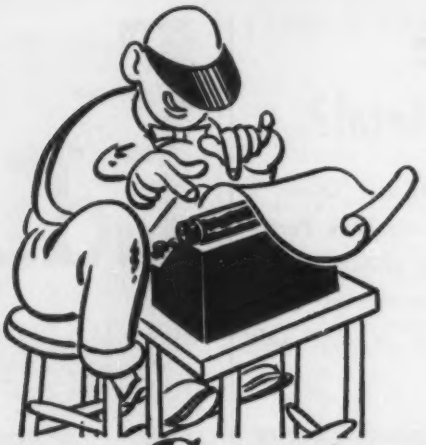


Dear Customer

by Jack R. Light

SEASON'S PERPLEXITY: Someone ought to invent a special system to aid business in the holiday season. We don't mean the consumer goods merchants, who do all right this time of year, what with Christmas savings funds, and other odd savings. We have another problem in mind. About this time of year, all of us are inclined to get just a little sentimental. We think about the thousands of people who have been involved in getting out the past 52 issues of THE IRON AGE.

We want all those people to know that we do appreciate their effort and that we like to think of them as individuals that we know, rather than as an anonymous group. Probably the one thing that makes it possible for us to get up early in the morning and go out to earn our daily bread is the fact that we make friends as we go through the business day.

Filled with such feelings about our business associates, we long for a perfect method of greeting them, and telling them something of how we feel at this time. While our acquaintance has originated on the level of crass commercialism, our present feelings are in this season compounded of true gratitude.

We are grateful to those who contribute editorial material to THE IRON AGE, either as a part of their job, or on their own time. We are grateful for this material because it is the lifeblood of our business. There was a time when the editors of THE IRON AGE got very little help from outsiders in their newsgathering. Every story was a fight against secretiveness and apathy. While perfection has not been achieved, we have come a long way since those dark days. And the result has been a far better IRON AGE.

We are grateful for the advent of those professionals in the advertising field, the advertising agencies. They have revolutionized the appearance of the advertising pages of every magazine in the country.

We are grateful not least for our customers, who make it possible for us to keep on publishing THE IRON AGE.

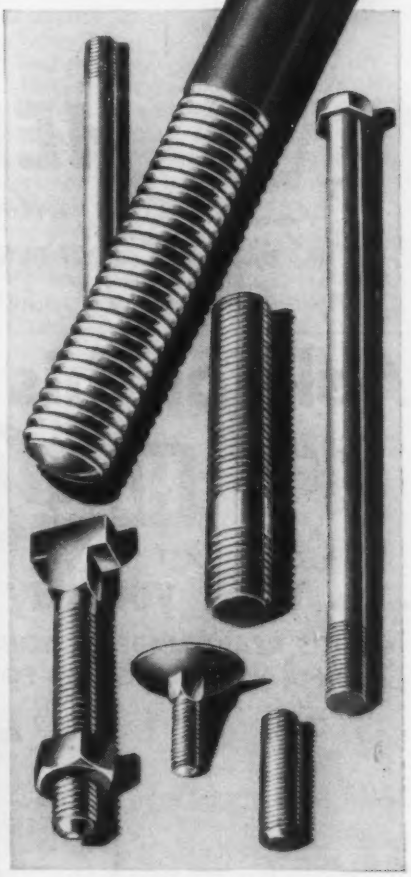
Whatever the New Year may bring to us, and there will be good weeks and bad—we are ready, we look back on 1949 as having been an interesting and satisfying one.

Strictly personally, we wish everybody — 42 million certified readers of this page—the Season's best. We've had a good time writing this squib from time to time, and plan to continue, until the boss catches up with us.

Looking for specialties?

EYE BOLTS

Accurately made in sizes ¼" and larger, or to your specifications, Pawtucket Eye Bolts are the answer to many assembly problems. Exclusive production methods keep costs low — assure uniform Class 3 Fit.



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Use Headed and Threaded Fasteners for Economy and Reliability

PAWTUCKET

"THE BOLT MAN"

MANUFACTURING COMPANY

327 Pine Street · Pawtucket, R. I.

THE PLACE TO SOLVE YOUR BOLT PROBLEMS

T.M. REG.

Why not use Perforated Metal?

This Wesix Electric Heater shows a typical application of Hendrick Perforated Metal, combining utility and attractiveness. The heater guard is 20 gauge steel, with 3/16" x 1½" side stagger perforations.

With facilities for producing any required shape and size of perforations in any commercially rolled metal, Hendrick invites inquiries from manufacturers who may be considering the use of perforated metal in connection with any of their products.

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Manufacturing Company

Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
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37 DUNDAFF STREET, CARBONDALE, PENNA.
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Ask for this trade name:

HALLOWELL

. . . when you buy SHOP EQUIPMENT

IT'S READY-MADE OF TOUGH, LONG-WEARING STEEL IN A WIDE RANGE OF POPULAR MODELS AND SIZES

Pat'd and Pats. Pend.
Drawer Is Extra
"HALLOWELL" STEEL WORK BENCH

ALSO

Cabinet Work Benches, Tool Stands, Wall Cabinets, Floor Trucks, Foreman's Desks of Steel, Stools of Steel and other equipment.

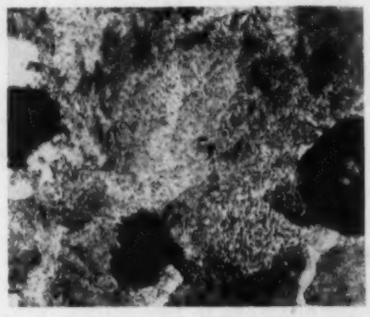
SPS STANDARD PRESSED STEEL CO.
BOX 523, JENKINTOWN, PENNSYLVANIA

"Serving Industry continuously since 1903 through Industrial Distributors"

Dear Editor

OUR FACE IS RED

I was very much interested in the article "Some Engineering Aspects of Nodular Cast Iron" in the December 1 issue of THE IRON AGE. Please look at fig. 6. Don't you think that it is a remarkable metallurgical phenomena



to have a microstructure taken from the 1.2 in. section and the 6 in. section to be identical even to the distribution of the carbide plates in the pearlite in the various grains?

B. F. SHEPHERD
Chief Metallurgist
Ingersoll-Rand Co.
Phillipsburg, N. J.

The mixup was our fault. The micro for the 6-in. section was incorrect. The correct micro that should have been used to illustrate the 6-in. section appears herewith. Our apologies to the author, Dr. Austin.—Ed.

AUTHOR'S COMMENTS

The presentation of my article in the Nov. 17 issue of THE IRON AGE is excellent. I would just like to add that nowhere have I encountered more thoughtfulness and considerate rapidity of response than among those people of THE IRON AGE with whom I've had the pleasure of communicating.

CHARLES GOLDBERG
Chief Chemist
New England Smelting Works, Inc.
West Springfield, Mass.

CONTAMINATION EFFECT

It would be greatly appreciated if you would send us tear sheets or reprints of the following articles appearing in your magazine, "Effect of Contamination on Quench Media," May 5, 1949, and "Fracture of Ductile Metals," July 7, 1949.

W. R. PRINDLE
Res. Metallurgist
University of California
Berkeley, Calif.

Copies have been sent.—Ed.

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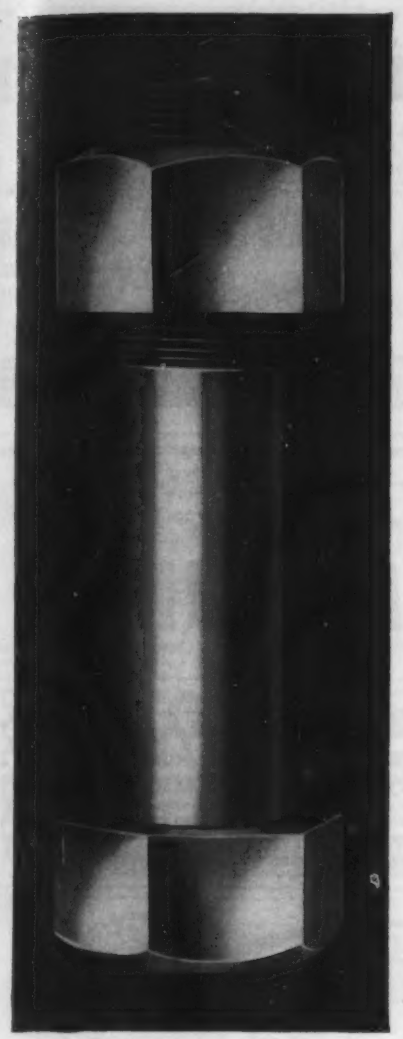

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FATIGUE CRACKS

Continued from Page 20

ing is chains and binders." And Editor E. J. Baker, Jr., of *Farm Implement News*, pointed out that John Leslie, Signode board chairman, is "built on the Paul Bunyan school of architecture." Had he been on hand, allowed Reader Baker, "he would have dashed down to the street, lifted the fallen 3½ ton casting, set it gently back in place on the truck, and made it fast with Signode strapping by hand."

We retire from the discussion. Considering that laundry machinery is involved, it should be a good clean fight. Nice of Mr. Segal to come to the aid of a competing trucking firm, though.

Marbles

Your favorite family journal's Metal Industry Fact Book edition, due off the press January 5, has whetted the appetites of at least a few of the readers. There's no other way to account for the interest in the mishap of our young son's bobbling his sack of marbles in the December 8 issue (Fatigue Cracks, p. 164).

For contributing the correct answer of 15, a copy of the Fact Book Edition will be sent to J. H. Schloen, Eugene M. Smith, Newton Skelton, E. W. Romig, B. Schear, R. F. Meyers, John M. Bigler, Morris Newberger, W. B. Boyd, J. W. Cricchi, Bernard B. Glowacki, Simon Lippa, H. J. Roth, Harold H. Seymour, F. R. Kuehne, and William T. DeLong. Since we have a sympathetic understanding for f.f.j. readers who do puzzles on company time, we won't mention the firms, nor will we expose those whose algebra was a little rusty.

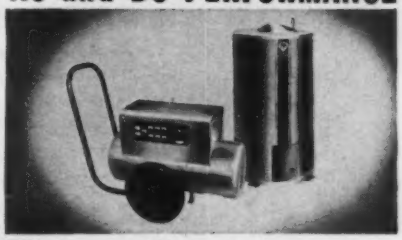
Not a single reader calculated the correct ages of our children, the total of which, less 9, provided an alternate means of reaching the correct answer. The 10-year old might have been suspected, but the 7-year old twins threw everyone off. As a matter of fact, they threw us off a little bit 7 years ago.

Oh, yes. The correct time, which three clocks failed to give in last week's problem, was one minute past 8.

To provide a little stimulation for weary brains over the holiday season, Mr. De Long, scrapes the moss off an old timer: A hunter walks 3 miles due South from camp, then five miles due east, where he shoots a bear. He returns 3 miles due north to camp with the carcass. What color is the bear? If you don't have the answer already, you're overdue. We won't even tell, except on request.

Resume Your Reading on Page 21

NEW ARC WELDERS BOOST AC and DC PERFORMANCE



FASTER welding, better quality welds, lower power costs, and simplified maintenance are furnished by a new line of AC and DC arc welders introduced by Metal and Thermit Corporation.

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Descriptive folder gives full particulars. Address Metal and Thermit Corporation, 120 Broadway, New York 5, N. Y.

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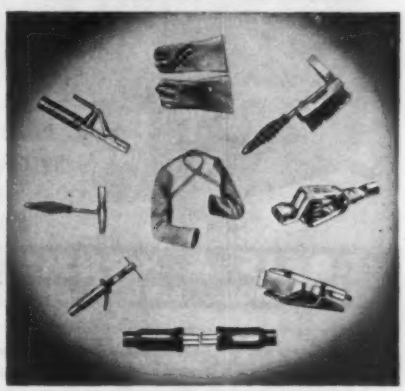

UNDERSCORING the importance of proper accessories to top welding performance, more and more fabricators are taking pains with selection of accessories. Speedier, lower cost, safer and improved welding are assured when such items as helmets, shields, holders, connectors, cleaning tools and protective clothing are carefully selected. And more and more fabricators—sold on M & T electrode and arc welder performance — are specifying the M & T line of "accessories to the perfect weld." For descriptive literature, address Metal and Thermit Corporation, 120 Broadway, New York 5, N. Y.

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See our Adv. on page 74 Feb. 3 Iron Age
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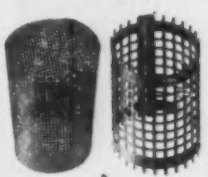

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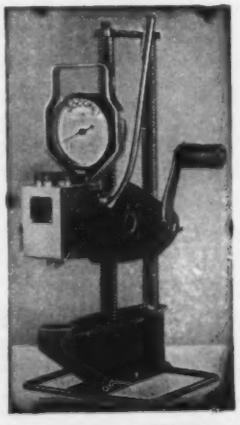

Continued from Page 28

duced and productivity must be increased to develop exports and balance trade. Agreements between producers might neutralize efforts of certain producers. To build a united Europe, trade barriers must fall. Competition must be assured in both national and European markets. This is the thinking behind the government's decision.

A framework of anti-trust legislation already exists in France. Article 419 of Penal Law provides punishment for everybody "practicing or trying to practice, alone or together or concerted with others, an action on the market to secure a gain which would not be the result of the natural law of supply and demand, everybody who directly or indirectly increase or try to increase or decrease artificially prices of food or goods or private or public securities."

This law has not been strictly enforced in the past. There has been no anti-trust division in charge of making inquiries or pressing suits.

Refugee Technicians Recruited

Sao Paulo—A number of technical workers have been recruited from refugee camps in Europe and are on their way to Brazil.

The group includes specialized workers in machine tool plants, automobile plants, electricians, diesel engine experts, ship and aircraft builders, metalworkers, miners and precision instrument makers.

The Immigration Dept. is inviting applications from interested persons or firms to place the men in suitable positions.

Luxembourg Steel Output Slumps

Luxembourg—Output of iron and steel in Luxembourg during October declined, not only under the average of the first months of this year, but also under the monthly average of 1948 and the monthly average of 1947.

October output of steel was 138,922 tons compared with 154,738 tons in September. Production in March was 254,029 tons. The monthly average for 1948 was 204,404 tons, and the monthly average for 1947 was 142,828 tons.

Resume Your Reading on Page 29

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Terms of Sale: Certified Check or Cash—25% deposit required.

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5" Jones planer table type
52" King vertical
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No. 2112 & 112B Excello precision
Nos. 42, 47A & 48A Heald Boramatic

DRILLS

20" No. 2 Mfg. Colburn
20" Cint. Bick. Super Service Mfg.
21" Canedy Otto
21" & 24" Cinti. Bickford
24" Kokomo
24" Cint. Bick. Super Service
No. 217 Baker 3 spindle
Nos. 121, 310, 315 & 513 Baker
No. 30HO Baker
3', 10" Morris radial
4' 11" Cint. Bick. Universal radial
4' Hammond radial, elbow arm
6', 15" Dreses radial
16" Allen 6 spindle, No. 2
24" Demco 4 spindle, No. 3
24" Foote Burt 6 spdl., No. 2
24" Allen 4 spdl., type 2K H

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Nos. 3 & 12 Barber Colman
Types A & T Barber Colman
Nos. 6 & 72 Fellows
Nos. 8H, 12H, 16HS & 18H Gould & Eberhardt
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No. 130 Cleveland Rigid hobber
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3" Gleason spiral bevel gen.
No. 7 Gleason cutter grinder
18" Gleason testers & lappers
No. 8M Fellows Red Line Checker
24" Flather auto. spur
8"-12" Red Ring shaver
8" Red Ring lappers
Barnes Hut-O-Lap lappers
No. 4 Cimatool rounders

GRINDERS

6"x18", 10"x18", 10"x36", 10"-14"x72" & 16"x36" Norton
4"x18", 6"x18", 10"x18", 10"x24", 14"x36" & 16"x72" Landis
6"x18" & 6"x32" Brown & Sharpe
Nos. 1, 2 & 13 Brown & Sharpe univ.
10"x24" Landis universal
26" No. 226 Gardner disc
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30" No. 230 Hanchett opposed disc
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6" P. & W. vertical shaper

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4" Ajax upsetter
No. 1 Ajax forging roll
No. 5N Nazel air hammer
600 ton Hamilton forging press
⅜" Wat. Farrel OD SS cold header

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Continued from Page 124

volume off as much as 35 pct. The cause for the drop in volume was said to be the steel strike and the attendant uncertainty as to future programs, according to trade sources.

Dealers also report that the range of price fluctuation is considerable since buyers are shopping for the lowest prices possible. The resultant price testing during the month has been severe.

Recently, auctions have become a form of competition to the average dealer instead of a chief source of his machines. Some firms have dealers represent them at auctions for a stipulated fee. In such cases, the dealer who plans to resell can buy little if anything because of the high prices.

Philadelphia to Be NISA Host

Philadelphia—The Quaker City chapter of National Industrial Service Assn., a local organization of dealers in used and rebuilt electrical equipment, will be hosts at a sectional meeting to be held at the Park Sheraton Hotel, Philadelphia, Jan. 14. New England, New York, and Washington chapters will participate in the program.

Llewelyn Group Incorporates

Pittsburgh—Llewelyn Associates, Inc., consulting and engineering firm, and a leading dealer in the used and rebuilt mill and mill equipment field, was incorporated Nov. 1. The officers of this new corporation are Tom Llewelyn, president; Henry Sanford, vice-president, and Al Curry, secretary-treasurer.

Buffalo NISA Chapter Planned

Buffalo—The formation of a chapter of the National Industrial Service Assn. in this city was discussed at a meeting of electrical equipment rebuilders, recently, at the Markeen Hotel. Among those present were NISA president R. E. Ward of Raleigh, N. C.; Selden F. High, Cincinnati; Meyer Friedkin and W. J. Wheeler, New York.

Resume Your Reading on Page 125

LATEST TYPE—Nearly New

MACHINE TOOLS

BORING MILLS—Horizontal
CINCINNATI GILBERT 3½" bar, floor type, latest
LUCAS #41, 3" bar, Table Type, "Precision", Latest
LUCAS #43, 5" bar Table Type, "Precision", M.D.
NILES-BEMENT-POND 5", 8" bar, Floor type, M.D.
UNIVERSAL 3" bar, high speed, latest type
BORING MILLS—Vertical
BULLARD 12" and 16", 6 spindle Mult-Au-Matic, Type D, single or double spindle, Latest Type
BULLARD 24", 36", 42" "Spiral Drive", Latest Type
KING 62", 2 swivel heads, Rapid Traverse, M.D.
NILES 100", 2 swivel heads, PRT, D.C., Motor Dr.
DRILLS—Miscellaneous
AMERICAN 4' arm 11" col., "Hole Wizard", Latest
LELAND & GIFFORD #2 LMS 6 spindle, Latest
NATCO 4 AL 30 spindle, Multiple, Latest Type
PRATT & WHITNEY 1Bx50" Deep Hole, Latest
GEAR CUTTING EQUIPMENT
FELLOWS 61A, #61, #7, #7A, #72, #725, #77, #7Z, #6Z2, High Speed Gear Shapers, latest type
GLEASON 3", 12" straight bevel generator, Latest
GLEASON 24", 77", 96", Bevel Gear Planer, Motor Dr.
GOULD & EBERHARDT 12H, 96H, Hobber, m.d.
GRINDERS—Cyl.—Plain & Univ.
BROWN & SHARPE #1, 2, 3, 4, Universal, Latest
BROWN & SHARPE #13 Univ. Cutter & Tool, Latest
LANDIS 4x12, Type H, Plain Hyd., Latest Type
NORTON 6"x18", 10"x36", 14"x36", Type C, Pl., Hydraulic, Latest Type
NORTON 10"x72" Type C, Pl., Mechanical, Latest
GRINDERS—Miscellaneous
BARBER COLMAN #3, 4 hob sharpener, latest type
CINCINNATI #2, #4 Centerless "Filmatic", latest
HEALD 72A3, 72A5, 74, Internal Hydraulic, latest type
LANDIS #12 Centerless, Hydraulic, Latest Type
GRINDERS—Surface
BLANCHARD #11, 16" Mag. chuck, Latest Type
HANCHETT Series 300, 12"x48" Vert. Sp. Hy., Latest
HANCHETT #36 Vert. 36" Mag. Chuck, Latest
HANCHETT Series 120 Plano Horiz., 30"x120", Latest
HEALD 25A—Rotary—16" and 30" chuck, hyd., latest
THOMPSON 12x12x24 Type B Hyd., Latest Type
LATHES—Engine & Mfg.
AMERICAN 36"x360" centers, 2 carriages, motor dr.
LODGE & SHIPLEY 14"x30", 16"x30" Centers, latest
MONARCH 10"x20" centers, Model EE Timken, latest
MONARCH 12"x30" Centers, 12x54" Centers, Model CK, Timken Bearing, Latest Type
MONARCH 22"x450" centers, 3 carriages, Timken Bearing, Model CM, motor drive
NILES 30x50" Boring, Timken, Latest Type
NILES 60"x55' centers, 2 carr., PRT, Latest Type
PRATT & WHITNEY 16"x30" Centers, Latest Type
LATHES—Turret
BARDONS & OLIVER #5, #7, Timken, Latest Type
FOSTER #4FU "Fastermatic", Timken, Latest
GISHOLT #1L, #2L, #3L, Universal, Timken, Latest
GISHOLT #3, #4, Univ., TIMKEN, Latest Type
JONES & LAMSON #3, #5 Univ., Timken, Latest
MOREY No. 2G, No. 3, No. 4, Timken Bearing, latest
WARNER & SWASEY #2A Univ., Timken, Latest
WARNER & SWASEY 4A Universal, Timken, Bar and Chucking (New 1947)
MILLING MACHINES—Plain
BROWN & SHARPE 2B, 3B, Timken, Latest Type
CINCINNATI 4-36, 2-18 Hydromatic, Simplex, latest
KEARNEY & TRECKER 1218, 1404, Latest type
KEARNEY & TRECKER 2H, 3H, 4H, 5H, Timken Bearing, Latest Type
MILLING MACHINES—Thread
LEES BRADNER 12"x54", 6x36, Latest Type
MOREY 12"x30" and 60" centers, Latest Type
PRATT & WHITNEY 6x60", Model C, Latest Type
MILLING MACHINES—Universal
BROWN & SHARPE 2A, 3A, Timken, Latest Type
KEARNEY & TRECKER 2H, Timken, Latest Type
VAN NORMAN #12, #26, #36, Timken, Latest Type
MILLING MACHINES—Vertical
BROWN & SHARPE #2B, Timken, Latest Type
CINCINNATI #2 Dial Type, Timken, latest type
GORTON #8D, #8½D, high speed, latest type
KEARNEY & TRECKER #2K, #3H, Timken, latest
PLANERS
BETTS (CONSOLIDATED) 84"x92"x16', 4 heads, Box Table, Power Rapid Traverse, D.C., M.D.
BETTS (CONSOLIDATED) 108"x84"x36', 4 heads, Box Table, Power Rapid Traverse, D.C., M.D.
NILES "Time Saver", 42"x42"x14', 3 heads, Rapid Traverse, A.C. vari-voltage drive, Latest
NILES 108"x84"x42', 4 heads Power Rapid Traverse, Box Table, D.C., reversing motor drive
SCREW MACHINES—Automatic & Chucking
CONOMATIC 2¾"—6 spindle, Latest Type
GOSS & DeLEEUW 6"x6¾", Auto. Chucker, Latest
GOSS & DeLEEUW, 8" Auto. Chucker, 5 spin., Latest
MISCELLANEOUS
BARNES #172, 306H, 307, 307B Vertical Hone, Hydraulic, Self-Oiling, Latest Type
CINCINNATI 1-36, 3-30, Duplex Vert. Surface Broach, Double ram, Model ER Hyd., Latest Type
CINCINNATI Series 300, ¼"x8'6" Press Brake, MD
HENRY & WRIGHT 50 ton Dieing Press, M.D.
LAKE ERIE 500 ton Vertical Hydraulic Press, latest
MICHIGAN 1708, 1712 Universal Reliever, Latest
VERSON #206, 10 gauge x 96" cap. Press Brake, latest

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